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ILLUSTRATIONS.

Pastoral Staff, and Decanters and Drinking Cup.—Designed by the late W. Burges 702, 703
All Saints Church, Ashdon, Essex: Elevations and Plan.—Mr. John W. Alexander, Architect 706-707
St. Joseph's New Catholic Church, Greenhill, Swansea.—Messrs. Pugin & Pugin, Architects 710
Charterhouse Cricket Pavilion, Godalming.—Mr. R. Nevill, Architect 711
Views at Bindon, Axmouth 714
Priory of St. Leonard, Stamford, Lincolnshire: West Elevation.—Measured and Drawn by Mr. A. D. Watson 715

CONTENTS.

Recollections of M. de Lesseps 691
Designs by the Late W. Burges 692
The Metropolitan Board of Works and the Law of Light 693
Notes 693
The Surveyors' Institution 693
Luton Sewage Works 696
Pulpit, Huish Episcopi, Somerset 697
The Architectural Association 697
Roman Remains, Tockington, Bristol 699
Designs by the Late W. Burges 700
Restoration of All Saints Church, Ashdon, Essex 700
St. Joseph's Catholic Church, Swansea 700
Cricket Pavilion, Charterhouse, Godalming 700
Bindon, Devonshire 700
Priory of St. Leonard, Stamford 700
Improvements at Windsor 717
Sewer Ventilation 717
New Board Schools in London 718
Infringement of Copyright of the *Builder*: Cox and Another v. Pardon and Others 718
Piccadilly Circus 718
Birmingham Architectural Association 718
"The Size of House Drains and the Use and Misuse of Traps" 718
The Student's Column: Land Surveying and Levelling.—XXI. 719
Church-Building News 720
Books:—Hasluck's Metal Turner's Handybook (Lockwood); Hasluck's Wood Turner's Handybook (Lockwood); Days and Hours in a Garden (Stock) 721
Recent Patents 721
Recent Sales of Property 722
Meetings 722
Miscellanea 722
Prices Current of Building Materials 722

Recollections of M. de Lesseps.

THE two volumes of autobiographical reminiscences of M. Ferdinand de Lesseps, an English version of which has been published in London,* contains less of interest to architectural and engineering readers than might have been expected, considering the nature of the work in connexion with which its author's chief reputation has been made. The *rôle* played by M. de Lesseps, who is, perhaps, more truly a citizen of the world than any other living man except Prince Bismarck, has been as much that of a diplomatist, a politician, and a financier, as that of an engineer; and his two volumes are a good deal occupied with matters which may be said to lie outside of our special province. Of engineering information, in the strict sense of the word, there is in truth little or nothing,—M. de Lesseps appearing, in connexion with the Suez and Panama Canal schemes, rather in the light of a general director and a diplomatic negotiator than an engineer. There is, however, a good deal in regard to the correspondence about the Suez Canal scheme showing the working of various interests behind the scenes, which is of considerable significance now that the canal, once so contemned and prophesied against in this country, as a thing impracticable and vain, has been long ago quietly accepted as an accomplished fact. The statement of the Panama scheme from M. de Lesseps' point of view is also of some interest, though this is only sketched in a brief and general manner.

M. de Lesseps is not autobiographical, in the usual and complete sense; he does not begin, that is to say, with a sketch of his parentage and genealogy, or an account of his boyhood. The "Recollections" open with an account of his mission to Rome in 1849, and as the whole of this portion of the work is entirely political, we may pass it over here without further remark. But the greater part of the rest of the first volume, as well as a portion of the second, is occupied with "The Origin of the Suez Canal," a title which, in fact, is made to include the main history of all the negotiations and fights and difficulties connected with getting it done,—the latter, we regret to say, mostly emanating from England.

The whole thing came about in a more accidental kind of way than would be generally imagined now. M. de Lesseps, having the good luck to have a mother-in-law who was both very wealthy and very much attached to him, was, after his recall from Rome, living on and managing for her an estate in France, on which he had restored an ancient castle which had belonged to Agnes Sorel. While thus occupied, he heard of the death of Abbas Pasha, the Viceroy of Egypt, and the succession of the youngest son of Mehemet Ali, whom he had known and taught to ride as a boy. On hearing of his former pupil's accession to power, he wrote congratulating him, and received in reply what he evidently wished for, an invitation to come to Cairo. The question of a Suez canal had been a favourite one with M. de Lesseps long before, and he had already, he tells us, studied it in every detail. Here was the opportunity, and the former riding pupil was primed with the idea, and seems to have fallen into it in a most docile and teachable spirit. As riding was the beginning of his acquaintance with the Viceroy, so riding seems to have had some influence in getting him the concession for the canal; or, at all events, M. de Lesseps thought so. The Viceroy called together all his generals to consult them on the question. "As I rode out with them on horseback, and as they were inclined to think more of a man who could jump a fence than of a *savant* and a bookworm, they were well disposed towards me." The Viceroy told the generals to seat themselves on some chairs in front of the divan, repeated the conversation he and M. de Lesseps had just had together, and asked for their opinions on the proposals of "his friend." "They stared at me and looked as if they thought that their master's friend, whom they had just seen put his horse over a wall, could not be otherwise than right; they raised their hands to their heads as their master spoke, in sign of assent. The dinner was brought in on a salver, and, just as we had been of one assent, so we all dipped our spoons into one and the same tureen, which contained some excellent soup. Such is the faithful and true narrative of the most important negotiation I ever undertook or am likely to undertake."

The idea of the canal had been made a favourite one in M. de Lesseps's mind by the perusal of the report of Napoleon's engineer, Lepère, in favour of the scheme; a report made by Napoleon's command during his early campaign in Egypt. Short and simple as was the first step, the consent of the Viceroy, there was much work to go through before the funds could be raised and the diplomatic fears and objections of various Governments overcome, England being, as every one knows too well now, the principal and most persistent opponent of the canal; and the correspondence on the subject with Lord Palmerston and other persons high in power in this country, in which the same objections (very selfish ones, by the way, from an international point of view) were repeated over and over again, is not pleasant reading for Englishmen, and ought to be a lesson against the violent and pugnacious opposition of a scheme of the kind merely because it is new, or because it is supposed that somebody or other's interests will be hurt by it. The perseverance, energy, and diplomatic tact which M. de Lesseps showed in combating against this opposition comes out very well in the series of letters printed, and the author may be excused for his obvious egoistic satisfaction in the publication of correspondence which shows how everybody said he was wrong, and how, nevertheless, he was right all the time. It would hardly be in human nature, and certainly it was not much M. de Lesseps's nature, not to indulge in a good deal of the "I-told-you-so" spirit, with such unusually good material for it. His diplomatic instinct is displayed at an early period of the narrative, when at an audience of various important officials, including all the representatives of foreign powers, the Viceroy announced that he had resolved to open up the Isthmus of Suez by a maritime canal, and to entrust M. de Lesseps with the formation of a company, composed of capitalists of all nations, to which he could cede the right to execute this enterprise. "Then speaking to me, he said 'Is not this so?' I then spoke a few words, taking care to let the spontaneity and merit of the decision remain with him, to avoid ruffling the susceptibilities of foreigners." The Viceroy observed to the Consul-General of the United States, "Well, M. de Leon, we are going to start an opposition to the Panama Canal" (which was then a scheme talked of in America), "and we shall be done before you"; which, indeed, has proved strictly true.

It was a singular coincidence, as M. de Lesseps notes, that the house assigned to him by the Viceroy, the "Palace of the Muçafirs," was the one which had been the residence of the Egyptian Institute at the time of Napoleon's expedition, and that it was here that the scientific committee appointed by Napoleon to consider the practicability of the canal used to meet; so that there seems a remarkable continuity of events in the fact of the actual carrying out of the canal being designed and directed in the same house. M. de Lesseps himself seems to have been treated quite as a potentate, and was informed that he had twenty horses at his disposal, ten for harness

* Recollections of Forty Years. By Ferdinand de Lesseps. Translated by C. B. Pitman. London: Chapman & Hall. 1887.

and ten for riding, besides "a state coach richly gilt, a barouche, a landau, and 'my lord.'" When he drove away from a conference with the Viceroy, in his state coach drawn by four white horses going at full gallop through the narrow streets of Cairo, the footmen, in spite of his admonitions, delivered blows with their staves right and left to keep off the native foot-passengers, who stood up unresentingly against the walls, exclaiming, "Ah, there is a great lord going by; glory be to God." Another little story shows in a more serious manner the amount of influence which M. de Lesseps possessed. Every one remembers the incident of the French men-of-war steaming away in procession before the bombardment of Alexandria. From M. de Lesseps' account, it appears that this movement, which occasioned such comment throughout Europe, was pretty directly due to him:—

"Being in London at the time of the English Expedition, I learned that Alexandria was about to be bombarded. No one else knew of it, so I came at once back to Paris, and begged MM. de Freycinet and Ferry to come from the Elysée, where a cabinet council was being held. I said to them, 'I warn you that Alexandria, which we have created, and which, thanks to the engineers, sailors, &c. whom we have sent out, has prospered, is about to be bombarded. Well, France must not be responsible for the carnage. When I knew it it had a population of 45,000, now it has 200,000 inhabitants. It was created by France, and we cannot bombard it.' A telegram was then sent to our fleet ordering it to withdraw. I relate all these facts, as they are but little known. Our Government, which behaved very straightforwardly in the matter, quite understood the situation, and could have no part or lot in the destruction of the town."

This, we admit, is "politics,"—very much so; but it throws such a light on the power and influence, in his own country, of the maker of the Suez Canal, that we cannot forbear quoting it.

The long story of the English opposition to the canal, about which much may be read in these pages, we cannot go into in detail. The account given of Lord Palmerston's objections and his reasons for them, both as to the matter and manner of them, is little creditable either to his judgment or his good taste or courtesy; but, naturally, M. de Lesseps may be supposed to make the worst of him. The point which M. de Lesseps specially wishes to lay stress on about England is, that it was actually to our immediate interests to have a direct way to India, and yet we opposed the canal. The letters of this portion of the book give a vivid idea of the author's untiring and ubiquitous energy in opposing the opponents of his scheme, to which in general, however, he found the commercial magnates of this country favourable. Among the opponents was Robert Stephenson, strangely enough, who appears to have relied on a rather partial survey of the ground made by him in conjunction with some French engineers in 1847. M. de Lesseps says in a letter from Constantinople to Barthélemy St. Hilaire, "Mr. Stephenson admits, in a letter to the *Times*, that he only visited a part of the Isthmus. I know what part that is, for I myself saw the tracks of his carriage-wheels, which did not extend more than a league beyond Suez." Stephenson should have remembered in what a desert country he was travelling, and have had his wheel-marks obliterated. One of the principal bugbears which the author had to contend against was the idea entertained by many persons, based on the result of a survey made by Napoleon's engineers, that there was a considerable difference of level between the seas on either side of the isthmus. M. de Lesseps appears to have declined any belief in this theory from the outset,—he is one of those men who is not disposed to believe anything that is adverse to his own schemes; but in this instance a more careful survey, or one made under more favourable conditions (for that of Napoleon was made in the midst of warlike operations) dispelled this illusion, though with some difficulty; for so great was the respect entertained (and with reason) for Napoleon's brilliant band of *savants* of the former generation, that some of those who had taken part in the more recent, and, as it proved, more correct survey, were at first inclined to doubt their own results.* It is worth note that this is one of the very difficulties which have been made a good deal of in regard to the Panama canal, and M. de Lesseps, of course, argues from the one case to the other. He had declared from the first that the canal would not require locks, that it was to be essentially a maritime, and not an inland canal. In the course of his remarks on this point, in the first volume, he says (p. 141):—"I stuck to my text in spite of all opposition, and my obstinacy has had its reward. I intend to act just in the same way at Panama, though many engineers would prefer, on account of the difference in level, not of the seas but of the tides, to construct a lock. I would not have one at Suez, and I do not intend to at Panama, as thus I effect a saving of more than a million and a half." M. de Lesseps does not, however, explain in this passage how he means to work a canal without a lock, when there is a difference of some 20 ft. between the tide at one end and that at the other end of the canal; and more, when we come to the remarks on the subject of the Panama Canal, at the latter part of vol. ii., we read that in consequence of the Pacific tide being 19 ft. 6 in. at Panama, while the Atlantic tide at Colon is only 2 ft., "which would cause currents of four or five knots an hour in the canal, and create a danger to navigation," the method will be adopted of having a waiting basin and a tidal gate at Panama. That is not exactly the same thing as a lock, in one sense, but it is the same essentially, and means something very different from a maritime canal of the same class as that of Suez; and it is odd indeed after this to read (page 195) that "upon the proposal of the engineers of the Suez Canal the Commission [for inquiring into the Panama Canal scheme] decided by a large majority against the system of locks, and declared strongly in favour of an open canal *on the level*, the feasibility of which seemed quite clear if the Colon-Panama line were adopted." So that apparently M. de Lesseps sees no difference between an open canal "on the level" and a canal with a tidal gate and a 19 ft. rise and fall of tide.

The summary given of the various schemes proposed for the Inter-Oceanic Canal is of considerable interest, as it gives the main facts as to what has been proposed within a small compass and in a readable form. The subject occupied the consideration of the International Congress at Paris in 1875, and a kind of international jury was formed to collect the necessary information and give an opinion in detail. This Jury or Congress was divided into five Committees, with the object that each should thoroughly inquire into one branch of the subject, one taking probable traffic, another probable income, another the question of rentes, &c. Several schemes were ultimately brought before the Congress. Señor de Garay, on the part of the Mexican route, proposed a route by the Tehuantepec isthmus, with a canal 150 miles long, a summit level of 975 ft., and sixty locks, and which would have required twelve days for the passage of a vessel,—a scheme which was rejected at once. The Nicaragua scheme, of which a pretty full detail, with some illustrations, was given in our columns recently,† had, M. de Lesseps admits, a good deal to recommend it, and he speaks well of it as admirably conceived and propounded; which, it may be observed, is a good deal more fairness and courtesy than M. de Lesseps and his scheme have received at the hands of the projectors of the Nicaragua scheme. This and the Panama scheme alone were seriously entertained for final consideration by the Congress, and the Panama route was deliberately selected as the one possessing the greatest advantages, requiring no series of locks, with their costly constructions, and promising a quicker passage than any of the others. The voting for it, on May 29, 1879, was by the large majority of 78 to 8, with 12 non-voters; some of whom, however, were the official or professional representatives of other schemes.

M. de Lesseps does not go into the present financial aspect of the canal scheme, no doubt because that would be very dry reading for a book of this kind. Nor does he say much about the progress of the work since 1879, which would also be dry reading. He brings before the reader at every opportunity the parallel between the opposition and the prophecies of failure which were made against the Suez Canal, and its triumphant success in spite of all; and the moral we are intended to draw is obvious; indeed, if it were not, the author saves any trouble by drawing it himself, on more than one page of his book, but avoids drawing any attention to the enormous discrepancy between the two schemes in regard to the natural difficulties of site in the two cases. He roundly asserts that the canal will be open in 1889. No one would be more glad to see it than we should, but we cannot at present see our way to accepting M. de Lesseps' *couleur de rose* prophecies. That the canal will ultimately be completed we believe, because France is so far committed to it now that it has become almost a point of national honour to carry it through, and it is in reality only a question of time and money; but how much of these two measures of value will be consumed over it yet remains to be seen.

* See a summary of the matter at this stage given in the *Builder* for January 28, 1856.

† *Builder*, October 1, 1887.

DESIGNS BY THE LATE W. BURGES.

WE noticed briefly some time ago a few of the first-published photographs of this series of illustrations of Burges's decorative designs, edited and annotated by Mr. Pullan. The portfolio,* including twenty-three subjects, is now complete, and forms a highly-interesting collection of designs,—not all, certainly, of the same interest, but all marked by the strong individuality of style and manner which belonged to everything that Burges produced.

The photographs numbered 2 and 3 illustrate the design for the decoration of St. Paul's, which, though it was undoubtedly a remarkable piece of work in its way, was such a preposterous scheme when regarded as a work to be actually carried out, that only a very doubtful kind of credit attaches to it, though it was, perhaps, worth while to keep this memorial of it. We are disposed to think, however, that Burges never regarded the design as one that would be carried out; in fact, he himself said to us in speaking of the St. Paul's decorative scheme, "Nothing will be really done"; and we suspect that, knowing that the scheme was out of the pale of practical probabilities, he simply amused himself with showing how he would have decorated St. Paul's if he had built it. It is impossible that he could ever have seriously supposed that he would be allowed to hack away the whole interior masonry to replace it with slabs of marble; and almost impossible to us to imagine that he could ever, in his inner mind, have seriously wished to do this. If he did, it said little for his critical judgment or his respect for the work of a distinguished predecessor.

Nor do the sculpture subjects which are illustrated entirely justify their position. We cannot say how much superior they may have looked in Burges's original drawings, for they are the work of carvers, not of sculptors,—like most of the work done in modern churches. The selections from the Waltham Abbey reredos look much better in these photographs than in the actual work, because we get them apart from the tawdry colour with which the work has been bedizened; the figures have much point of pose and expression,—they tell their story well, in a sense; but they are only like Mediæval sculpture a little better modelled than usual, though the decorative adjuncts are very good. It is otherwise when we come to purely decorative work. There Burges was always picturesque, and always original and forcible in his treatment of his subject and

* Published by B. T. Batsford.

material. Plate 9, for instance, gives us the stall-ends from Cork Cathedral. Here there are no antiquated "poppy-heads," of the accepted form, which has been imitated *ad nauseum*, but pierced open-work scrolls of conventional foliage, graceful in design but perfectly solid and substantial in their full and well-fed stems and leaves, each with a bird sculptured in the centre of the principal compartment, and seen in outline in the midst of a nearly clear space. This is a charming bit of work, and an excellent study of what conventional foliage in its best form really means. The Pastoral staff, plate 14, of which, by Mr. Pullan's permission, we give a reproduction (see plate in this number), is a good example of the characteristic vigour with which Burges reproduced a Mediæval idea; the crockets, and the position of the sculpture in the curve of the staff, are derived from Mediæval work; but the device of the St. George and the dragon, and the bound woman below, is completely original as here applied, and the dragon growing out of the staff-end is Mediæval in the best sense; it has the Mediæval spirit, quite apart from anything like copyism. Still more may this be said of the decanter designs, of which also we give a reproduction; the force and vigour of the griffin handles, with their strongly-marked lines and savage grip on the bottle with their fore-paws, can hardly be too highly rated; this is one of the best pieces of modern grotesque to be seen. The basket-work business on the top of the decanters is a mistake, and forms an annoying blemish in an otherwise remarkably fine piece of work. The bodies of these decanters are glass, the necks of malachite and porphyry, the metalwork of silver, and the bosses inlaid with Greek, Roman, and Byzantine coins. These were designed by the artist for his own use, he having been in the habit of applying such fees as he got for literary work or in competitions in the production of objects of this kind made from his own design. A collection of glasses, with mountings, plate 21, shows also some curious and picturesque fancies in design, especially a bottle standing on two claws, and with a bird's head and beak for stopper.

It was hardly worth while to include in the set Burges's grotesque design of St. Simeon Stylites,—a good joke for the moment, no doubt, but not worth stereotyping: and it may be some question whether the kind of Mediæval force exhibited in this collection generally will retain its hold permanently on the taste and interest of the modern generation. While the memory of Burges's career and talents is still present, all the work into which he put his own interest will be valued; but we doubt whether many people, even now, would care to furnish their houses with this type of work. It is powerful, but somewhat heavy and inelegant; admirable work of its kind, but not the kind to retain its hold on another generation. Its highest interest, perhaps, arises from the fact that it is thoroughly well done in its way, and that there is evidence in every line of it that the man who designed it enjoyed doing it,—a kind of interest which, unfortunately, very little modern decorative work does exhibit.

THE METROPOLITAN BOARD OF WORKS AND THE LAW OF LIGHT.

LAST week we published [p. 686] a report of Mr. Edwin Lawrence's speech at a meeting of the Metropolitan Board of Works in regard to the law of light, the result of which was that the subject has been referred to a Committee of the Board. We have no wish to prejudge the report of the Committee in question, but it appears to be very doubtful if any improvement in the law in regard to the obstruction of light can be made without altering it *in toto* in respect to the erection of new buildings. So far as obstruction by new buildings for public purposes is concerned, the law is clear. It is laid down in express terms in Roscoe's "Digest of the Law of Light," in Article 33:—"An easement of light being an interest in land for which compensation may be claimed under the Lands Clauses Consolidation Act, 1845, a person the light of whose house is obstructed by works in course of erection by a public body created by the Legislature to whose undertaking the provisions of the Act are applicable cannot bring an ordinary action for damages or proceed for an injunction, but must proceed under s. 68 of the Lands Clauses Act to obtain compensation." That statement of the law is based on several cases, in one of which it was attempted to obtain an injunction against the School Board for London. But these have lately been approved and, as it appears to us, amplified by Mr. Justice North in the recently-reported case of Wigram *v.* Fryer, "Law Reports," 36 Chancery Division, p. 87 (October monthly number, 1887). In that case the defendant Fryer had obtained, on a sub-lease from the executors of one Pink, a plot of land for the purpose of erecting thereon artisans' dwellings. Pink, in his turn, had obtained his lease from the Metropolitan Board of Works, who had taken the land in question under a special Act in order that artisans' dwellings might be built upon it. Through what we must regard as an extraordinary legislative oversight, the Board had no powers themselves to erect the buildings. "It cannot be done," said Mr. Justice North, "by the Board erecting the buildings themselves; it can only be done by letting or selling to some person who is to do the same thing." Fryer obstructed certain ancient lights belonging to Wigram, and the question was whether the ordinary rule of law, viz.: the granting of an injunction or of damages, applied to such a case as this. We do not propose to go through the reasons by which Mr. Justice North arrived at his decision. Suffice it to say in his own words that "the contention that by the Board's disposing of the property the right against them has ceased, and that there can be no right against Mr. Fryer for compensation, and therefore that there must be a right for an injunction, cannot be sustained." Finally, he said, "I am of opinion that what is being done here is in compliance with the Act, and that the plaintiff's remedy, if he is injured, shou'd be by obtaining compensation and not by injunction." In this case the buildings were in a sense buildings for a public purpose; but, on the other hand, when the Board for the purpose of public advantage makes a new street, and, as a consequence thereof, persons under leases from the Board erect new buildings of a private nature, then there is really but an infinitesimal difference between the two cases. In the latter case, compensation should be granted in the way in which it is given under the Lands Clauses Act, and the ordinary legal remedies should be suspended. That, as we understand it, is Mr. Lawrence's contention, and this recent case of Wigram *v.* Fryer seems to extend the law so much that there should be no difficulty in carrying it a step further. Without a careful perusal of a number of statutes it would be unwise to hazard an opinion on the actual rights at present of the Board or of the lessees, in the case of the erection of shops or other similar buildings. But it may possibly be found that even now the Acts, if there is an obstruction of light by such erections, override the ordinary law. If they do not, it would be but a slight step to make the law as laid down in the decision we have referred to, and others which precede it, applicable to all cases in which new buildings are constructed by the Board or their lessees.

NOTES.

THE new "Sheffield Society of Architects and Surveyors," which held its opening meeting at the Montgomery Hall, Sheffield, on Tuesday last, seems to have made a good beginning, and promises to be an active and energetic Society. More than fifty members were present at the meeting, at which the President, Mr. T. J. Flockton, read the opening address, in which he described the objects of the Society, which included the formation of classes among the associates and students in the subjects of the design, construction, and the history of architecture; the preparation of candidates for examination by the leading societies; communication and exchange of opinion with the Royal Institute of British Architects, the Surveyors' Institute, and other kindred societies, and the receipt of their papers, and the ultimate formation of a library. He concluded by quoting the closing words of the President's address at the meeting of the Architectural Association, in which he counselled his hearers to uphold and extend the dignity and usefulness of their profession. Mr. C. Hadfield proposed a vote of thanks to the President, which was seconded by Mr. J. B. Mitchell-Withers. A number of paintings and engravings, lent for the occasion, were exhibited; among others, drawings in oil and water colours by Mr. Mitchell-Withers, and a design by the late Godfrey Sykes (lent by Mr. Hadfield) for decorating the ceiling of the old telegraphic newsroom at Sheffield, a design which unfortunately had never been carried out. Mr. Frederick Fowler, Vice-President of the Society, exhibited a number of photographs of the Forth Bridge work, of which his brother, Sir John Fowler, is chief engineer. Among the papers already announced for the session are one on "Registration," by Mr. T. Wreghitt Connon; on "the Value of Association and Federation," by Mr. J. Murgatroyd; on "Interest in Architectural Design," by Mr. C. Hadfield; and on "Architectural Education," by Professor Roger Smith. The Society at present numbers, it appears, seventy-three members, so that a large proportion of the actual members attended the opening meeting. We hope the Society will progress in numbers and in usefulness. The papers already announced, as noticed above, are all on rather general subjects; no doubt special subjects of artistic and scientific interest will be taken up in due time: this should be kept in view, as, after all, the real object of professional societies of this kind should be, in the words of the Charter of the Institute, "to advance the art of Architecture."

THE important paper on accidents in mines, read by Sir F. Abel last Tuesday at the Institution of Civil Engineers, brings forward one curious and unexpected source of danger, arising out of the improved ventilation of mines in the present day. The old lamps of Davy, Stephenson, and Clanny were really safe, he said, in the very moderate ventilating air-currents then to be met with in coal mines; but the improvements in the ventilation of coal mines have led to a great increase in the velocity of air-currents therein, under which the old lamps are no longer safe, as, when exposed for a short period to currents of air charged with fire-damp and travelling at high velocities, a communication is likely to be established between the flame and the gas and air mixture surrounding the lamps. Sir Frederick Abel, as might have been expected, regarded a portable incandescent electric light as the miner's safety-lamp of the future; the two principal difficulties connected with this being those relating to cost and weight. The lamp must carry its own battery, primary or secondary. Mr. Swan has made a secondary-battery lamp which weighs only 7 lb., though this is heavier than desirable; thirty of them, however, have been in use at the Risca Colliery for three months. Since then Mr. Jas. Pitkin has constructed one with equal results, and between 5 lb. and 6 lb. weight. Sir Frederick referred to several primary-battery lamps, by Messrs. Trouvé, Coad, Schanschieff, and Blumberg, which were successful, except in regard to the length of maintenance of light, which does not appear to have been got up to the requirements of mining work as yet, with primary batteries. The recharging of small primary batteries is more troublesome than the restoration of power in secondary batteries; the latter, however, pre-suppose the possession of a generator. As, however, there is every probability that a general electric lighting system will before long be in use in all important mines, the power for recharging will be at hand, and therefore the secondary electric lamp, all things considered, seems likely to be the safety-lamp of the future for coal mines.

and ten for riding, besides "a state coach richly gilt, a barouche, a landau, and 'my lord.'" When he drove away from a conference with the Viceroy, in his state coach drawn by four white horses going at full gallop through the narrow streets of Cairo, the footmen, in spite of his admonitions, delivered blows with their staves right and left to keep off the native foot-passengers, who stood up unresentingly against the walls, exclaiming, "Ah, there is a great lord going by; glory be to God." Another little story shows in a more serious manner the amount of influence which M. de Lesseps possessed. Every one remembers the incident of the French men-of-war steaming away in procession before the bombardment of Alexandria. From M. de Lesseps' account, it appears that this movement, which occasioned such comment throughout Europe, was pretty directly due to him:—

"Being in London at the time of the English Expedition, I learned that Alexandria was about to be bombarded. No one else knew of it, so I came at once back to Paris, and begged MM. de Freycinet and Ferry to come from the Elysée, where a cabinet council was being held. I said to them, 'I warn you that Alexandria, which we have created, and which, thanks to the engineers, sailors, &c. whom we have sent out, has prospered, is about to be bombarded. Well, France must not be responsible for the carnage. When I knew it it had a population of 45,000, now it has 200,000 inhabitants. It was created by France, and we cannot bombard it.' A telegram was then sent to our fleet ordering it to withdraw. I relate all these facts, as they are but little known. Our Government, which behaved very straightforwardly in the matter, quite understood the situation, and could have no part or lot in the destruction of the town."

This, we admit, is "politics,"—very much so; but it throws such a light on the power and influence, in his own country, of the maker of the Suez Canal, that we cannot forbear quoting it.

The long story of the English opposition to the canal, about which much may be read in these pages, we cannot go into in detail. The account given of Lord Palmerston's objections and his reasons for them, both as to the matter and manner of them, is little creditable either to his judgment or his good taste or courtesy; but, naturally, M. de Lesseps may be supposed to make the worst of him. The point which M. de Lesseps specially wishes to lay stress on about England is, that it was actually to our immediate interests to have a direct way to India, and yet we opposed the canal. The letters of this portion of the book give a vivid idea of the author's untiring and ubiquitous energy in opposing the opponents of his scheme, to which in general, however, he found the commercial magnates of this country favourable. Among the opponents was Robert Stephenson, strangely enough, who appears to have relied on a rather partial survey of the ground made by him in conjunction with some French engineers in 1847. M. de Lesseps says in a letter from Constantinople to Barthélemy St. Hilaire, "Mr. Stephenson admits, in a letter to the *Times*, that he only visited a part of the Isthmus. I know what part that is, for I myself saw the tracks of his carriage-wheels, which did not extend more than a league beyond Suez." Stephenson should have remembered in what a desert country he was travelling, and have had his wheel-marks obliterated. One of the principal bugbears which the author had to contend against was the idea entertained by many persons, based on the result of a survey made by Napoleon's engineers, that there was a considerable difference of level between the seas on either side of the isthmus. M. de Lesseps appears to have declined any belief in this theory from the outset,—he is one of those men who is not disposed to believe anything that is adverse to his own schemes; but in this instance a more careful survey, or one made under more favourable conditions (for that of Napoleon was made in the midst of warlike operations) dispelled this illusion, though with some difficulty; for so great was the respect entertained (and with reason) for Napoleon's brilliant band of *savants* of the former generation, that some of those who had taken part in the more recent, and, as it proved, more correct survey, were at first inclined to doubt their own results.* It is worth note that this is one of the very difficulties which have been made a good deal of in regard to the Panama canal, and M. de Lesseps, of course, argues from the one case to the other. He had declared from the first that the canal would not require locks, that it was to be essentially a maritime, and not an inland canal. In the course of his remarks on this point, in the first volume, he says (p. 141):—"I stuck to my text in spite of all opposition, and my obstinacy has had its reward. I intend to act just in the same way at Panama, though many engineers would prefer, on account of the difference in level, not of the seas but of the tides, to construct a lock. I would not have one at Suez, and I do not intend to at Panama, as thus I effect a saving of more than a million and a half." M. de Lesseps does not, however, explain in this passage how he means to work a canal without a lock, when there is a difference of some 20 ft. between the tide at one end and that at the other end of the canal; and more, when we come to the remarks on the subject of the Panama Canal, at the latter part of vol. ii., we read that in consequence of the Pacific tide being 19 ft. 6 in. at Panama, while the Atlantic tide at Colon is only 2 ft., "which would cause currents of four or five knots an hour in the canal, and create a danger to navigation," the method will be adopted of having a waiting basin and a tidal gate at Panama. That is not exactly the same thing as a lock, in one sense, but it is the same essentially, and means something very different from a maritime canal of the same class as that of Suez; and it is odd indeed after this to read (page 195) that "upon the proposal of the engineers of the Suez Canal the Commission [for inquiring into the Panama Canal scheme] decided by a large majority against the system of locks, and declared strongly in favour of an open canal *on the level*, the feasibility of which seemed quite clear if the Colon-Panama line were adopted." So that apparently M. de Lesseps sees no difference between an open canal "on the level" and a canal with a tidal gate and a 19 ft. rise and fall of tide.

The summary given of the various schemes proposed for the Inter-Oceanic Canal is of considerable interest, as it gives the main facts as to what has been proposed within a small compass and in a readable form. The subject occupied the consideration of the International Congress at Paris in 1875, and a kind of international jury was formed to collect the necessary information and give an opinion in detail. This Jury or Congress was divided into five Committees, with the object that each should thoroughly inquire into one branch of the subject, one taking probable traffic, another probable income, another the question of rentes, &c. Several schemes were ultimately brought before the Congress. Señor de Garay, on the part of the Mexican route, proposed a route by the Tehuantepec isthmus, with a canal 150 miles long, a summit level of 975 ft., and sixty locks, and which would have required twelve days for the passage of a vessel,—a scheme which was rejected at once. The Nicaragua scheme, of which a pretty full detail, with some illustrations, was given in our columns recently,† had, M. de Lesseps admits, a good deal to recommend it, and he speaks well of it as admirably conceived and propounded; which, it may be observed, is a good deal more fairness and courtesy than M. de Lesseps and his scheme have received at the hands of the projectors of the Nicaragua scheme. This and the Panama scheme alone were seriously entertained for final consideration by the Congress, and the Panama route was deliberately selected as the one possessing the greatest advantages, requiring no series of locks, with their costly constructions, and promising a quicker passage than any of the others. The voting for it, on May 29, 1879, was by the large majority of 78 to 8, with 12 non-voters; some of whom, however, were the official or professional representatives of other schemes.

M. de Lesseps does not go into the present financial aspect of the canal scheme, no doubt because that would be very dry reading for a book of this kind. Nor does he say much about the progress of the work since 1879, which would also be dry reading. He brings before the reader at every opportunity the parallel between the opposition and the prophecies of failure which were made against the Suez Canal, and its triumphant success in spite of all; and the moral we are intended to draw is obvious; indeed, if it were not, the author saves any trouble by drawing it himself, on more than one page of his book, but avoids drawing any attention to the enormous discrepancy between the two schemes in regard to the natural difficulties of site in the two cases. He roundly asserts that the canal will be open in 1889. No one would be more glad to see it than we should, but we cannot at present see our way to accepting M. de Lesseps' *couleur de rose* prophecies. That the canal will ultimately be completed we believe, because France is so far committed to it now that it has become almost a point of national honour to carry it through, and it is in reality only a question of time and money; but how much of these two measures of value will be consumed over it yet remains to be seen.

* See a summary of the matter at this stage given in the *Builder* for January 26, 1856.

† *Builder*, October 1, 1887.

DESIGNS BY THE LATE W. BURGES.

WE noticed briefly some time ago a few of the first-published photographs of this series of illustrations of Burges's decorative designs, edited and annotated by Mr. Pullan. The portfolio,* including twenty-three subjects, is now complete, and forms a highly-interesting collection of designs,—not all, certainly, of the same interest, but all marked by the strong individuality of style and manner which belonged to everything that Burges produced.

The photographs numbered 2 and 3 illustrate the design for the decoration of St. Paul's, which, though it was undoubtedly a remarkable piece of work in its way, was such a preposterous scheme when regarded as a work to be actually carried out, that only a very doubtful kind of credit attaches to it, though it was, perhaps, worth while to keep this memorial of it. We are disposed to think, however, that Burges never regarded the design as one that would be carried out; in fact, he himself said to us in speaking of the St. Paul's decorative scheme, "Nothing will be really done"; and we suspect that, knowing that the scheme was out of the pale of practical probabilities, he simply amused himself with showing how he would have decorated St. Paul's if he had built it. It is impossible that he could ever have seriously supposed that he would be allowed to hack away the whole interior masonry to replace it with slabs of marble; and almost impossible to us to imagine that he could ever, in his inner mind, have seriously wished to do this. If he did, it said little for his critical judgment or his respect for the work of a distinguished predecessor.

Nor do the sculpture subjects which are illustrated entirely justify their position. We cannot say how much superior they may have looked in Burges's original drawings, for they are the work of carvers, not of sculptors,—like most of the work done in modern churches. The selections from the Waltham Abbey reredos look much better in these photographs than in the actual work, because we get them apart from the tawdry colour with which the work has been bedizened; the figures have much point of pose and expression,—they tell their story well, in a sense; but they are only like Mediæval sculpture a little better modelled than usual, though the decorative adjuncts are very good. It is otherwise when we come to purely decorative work. There Burges was always picturesque, and always original and forcible in his treatment of his subject and

* Published by B. T. Batsford.

material. Plate 9, for instance, gives us the stall-ends from Cork Cathedral. Here there are no antiquated "poppy-heads," of the accepted form, which has been imitated *ad nauseum*, but pierced open-work scrolls of conventional foliage, graceful in design but perfectly solid and substantial in their full and well-fed stems and leaves, each with a bird sculptured in the centre of the principal compartment, and seen in outline in the midst of a nearly clear space. This is a charming bit of work, and an excellent study of what conventional foliage in its best form really means. The Pastoral staff, plate 14, of which, by Mr. Pullan's permission, we give a reproduction (see plate in this number), is a good example of the characteristic vigour with which Burges reproduced a Mediæval idea; the crockets, and the position of the sculpture in the curve of the staff, are derived from Mediæval work; but the device of the St. George and the dragon, and the bound woman below, is completely original as here applied, and the dragon growing out of the staff-end is Mediæval in the best sense; it has the Mediæval spirit, quite apart from anything like copyism. Still more may this be said of the decanter designs, of which also we give a reproduction; the force and vigour of the griffin handles, with their strongly-marked lines and savage grip on the bottle with their fore-paws, can hardly be too highly rated; this is one of the best pieces of modern grotesque to be seen. The basket-work business on the top of the decanters is a mistake, and forms an annoying blemish in an otherwise remarkably fine piece of work. The bodies of these decanters are glass, the necks of malachite and porphyry, the metalwork of silver, and the bosses inlaid with Greek, Roman, and Byzantine coins. These were designed by the artist for his own use, he having been in the habit of applying such fees as he got for literary work or in competitions in the production of objects of this kind made from his own design. A collection of glasses, with mountings, plate 21, shows also some curious and picturesque fancies in design, especially a bottle standing on two claws, and with a bird's head and beak for stopper.

It was hardly worth while to include in the set Burges's grotesque design of St. Simeon Stylites,—a good joke for the moment, no doubt, but not worth stereotyping: and it may be some question whether the kind of Mediæval force exhibited in this collection generally will retain its hold permanently on the taste and interest of the modern generation. While the memory of Burges's career and talents is still present, all the work into which he put his own interest will be valued; but we doubt whether many people, even now, would care to furnish their houses with this type of work. It is powerful, but somewhat heavy and inelegant; admirable work of its kind, but not the kind to retain its hold on another generation. Its highest interest, perhaps, arises from the fact that it is thoroughly well done in its way, and that there is evidence in every line of it that the man who designed it enjoyed doing it,—a kind of interest which, unfortunately, very little modern decorative work does exhibit.

THE METROPOLITAN BOARD OF WORKS AND THE LAW OF LIGHT.

LAST week we published [p. 686] a report of Mr. Edwin Lawrence's speech at a meeting of the Metropolitan Board of Works in regard to the law of light, the result of which was that the subject has been referred to a Committee of the Board. We have no wish to prejudge the report of the Committee in question, but it appears to be very doubtful if any improvement in the law in regard to the obstruction of light can be made without altering it *in toto* in respect to the erection of new buildings. So far as obstruction by new buildings for public purposes is concerned, the law is clear. It is laid down in express terms in Roscoe's "Digest of the Law of Light," in Article 33:—"An easement of light being an interest in land for which compensation may be claimed under the Lands Clauses Consolidation Act, 1845, a person the light of whose house is obstructed by works in course of erection by a public body created by the Legislature to whose undertaking the provisions of the Act are applicable cannot bring an ordinary action for damages or proceed for an injunction, but must proceed under s. 68 of the Lands Clauses Act to obtain compensation." That statement of the law is based on several cases, in one of which it was attempted to obtain an injunction against the School Board for London. But these have lately been approved and, as it appears to us, amplified by Mr. Justice North in the recently-reported case of Wigram *v.* Fryer, "Law Reports," 36 Chancery Division, p. 87 (October monthly number, 1887). In that case the defendant Fryer had obtained, on a sub-lease from the executors of one Pink, a plot of land for the purpose of erecting thereon artisans' dwellings. Pink, in his turn, had obtained his lease from the Metropolitan Board of Works, who had taken the land in question under a special Act in order that artisans' dwellings might be built upon it. Through what we must regard as an extraordinary legislative oversight, the Board had no powers themselves to erect the buildings. "It cannot be done," said Mr. Justice North, "by the Board erecting the buildings themselves; it can only be done by letting or selling to some person who is to do the same thing." Fryer obstructed certain ancient lights belonging to Wigram, and the question was whether the ordinary rule of law, viz.: the granting of an injunction or of damages, applied to such a case as this. We do not propose to go through the reasons by which Mr. Justice North arrived at his decision. Suffice it to say in his own words that "the contention that by the Board's disposing of the property the right against them has ceased, and that there can be no right against Mr. Fryer for compensation, and therefore that there must be a right for an injunction, cannot be sustained." Finally, he said, "I am of opinion that what is being done here is in compliance with the Act, and that the plaintiff's remedy, if he is injured, should be by obtaining compensation and not by injunction." In this case the buildings were in a sense buildings for a public purpose; but, on the other hand, when the Board for the purpose of public advantage makes a new street, and, as a consequence thereof, persons under leases from the Board erect new buildings of a private nature, then there is really but an infinitesimal difference between the two cases. In the latter case, compensation should be granted in the way in which it is given under the Lands Clauses Act, and the ordinary legal remedies should be suspended. That, as we understand it, is Mr. Lawrence's contention, and this recent case of Wigram *v.* Fryer seems to extend the law so much that there should be no difficulty in carrying it a step further. Without a careful perusal of a number of statutes it would be unwise to hazard an opinion on the actual rights at present of the Board or of the lessees, in the case of the erection of shops or other similar buildings. But it may possibly be found that even now the Acts, if there is an obstruction of light by such erections, override the ordinary law. If they do not, it would be but a slight step to make the law as laid down in the decision we have referred to, and others which precede it, applicable to all cases in which new buildings are constructed by the Board or their lessees.

NOTES.

THE new "Sheffield Society of Architects and Surveyors," which held its opening meeting at the Montgomery Hall, Sheffield, on Tuesday last, seems to have made a good beginning, and promises to be an active and energetic Society. More than fifty members were present at the meeting, at which the President, Mr. T. J. Flockton, read the opening address, in which he described the objects of the Society, which included the formation of classes among the associates and students in the subjects of the design, construction, and the history of architecture; the preparation of candidates for examination by the leading societies; communication and exchange of opinion with the Royal Institute of British Architects, the Surveyors' Institute, and other kindred societies, and the receipt of their papers, and the ultimate formation of a library. He concluded by quoting the closing words of the President's address at the meeting of the Architectural Association, in which he counselled his hearers to uphold and extend the dignity and usefulness of their profession. Mr. C. Hadfield proposed a vote of thanks to the President, which was seconded by Mr. J. B. Mitchell-Withers. A number of paintings and engravings, lent for the occasion, were exhibited; among others, drawings in oil and water colours by Mr. Mitchell-Withers, and a design by the late Godfrey Sykes (lent by Mr. Hadfield) for decorating the ceiling of the old telegraphic newsroom at Sheffield, a design which unfortunately had never been carried out. Mr. Frederick Fowler, Vice-President of the Society, exhibited a number of photographs of the Forth Bridge work, of which his brother, Sir John Fowler, is chief engineer. Among the papers already announced for the session are one on "Registration," by Mr. T. Wreghitt Connon; on "the Value of Association and Federation," by Mr. J. Murgatroyd; on "Interest in Architectural Design," by Mr. C. Hadfield; and on "Architectural Education," by Professor Roger Smith. The Society at present numbers, it appears, seventy-three members, so that a large proportion of the actual members attended the opening meeting. We hope the Society will progress in numbers and in usefulness. The papers already announced, as noticed above, are all on rather general subjects; no doubt special subjects of artistic and scientific interest will be taken up in due time: this should be kept in view, as, after all, the real object of professional societies of this kind should be, in the words of the Charter of the Institute, "to advance the art of Architecture."

THE important paper on accidents in mines, read by Sir F. Abel last Tuesday at the Institution of Civil Engineers, brings forward one curious and unexpected source of danger, arising out of the improved ventilation of mines in the present day. The old lamps of Davy, Stephenson, and Clanny were really safe, he said, in the very moderate ventilating air-currents then to be met with in coal mines; but the improvements in the ventilation of coal mines have led to a great increase in the velocity of air-currents therein, under which the old lamps are no longer safe, as, when exposed for a short period to currents of air charged with fire-damp and travelling at high velocities, a communication is likely to be established between the flame and the gas and air mixture surrounding the lamps. Sir Frederick Abel, as might have been expected, regarded a portable incandescent electric light as the miner's safety-lamp of the future; the two principal difficulties connected with this being those relating to cost and weight. The lamp must carry its own battery, primary or secondary. Mr. Swan has made a secondary-battery lamp which weighs only 7 lb., though this is heavier than desirable; thirty of them, however, have been in use at the Risca Colliery for three months. Since then Mr. Jas. Pitkin has constructed one with equal results, and between 5 lb. and 6 lb. weight. Sir Frederick referred to several primary-battery lamps, by Messrs. Trouvé, Coad, Schanschieff, and Blumberg, which were successful, except in regard to the length of maintenance of light, which does not appear to have been got up to the requirements of mining work as yet, with primary batteries. The recharging of small primary batteries is more troublesome than the restoration of power in secondary batteries; the latter, however, pre-suppose the possession of a generator. As, however, there is every probability that a general electric lighting system will before long be in use in all important mines, the power for recharging will be at hand, and therefore the secondary electric lamp, all things considered, seems likely to be the safety-lamp of the future for coal mines.

CAPTAIN SHAW'S report on the Exeter Theatre fire is very strong in condemnation of the construction of the theatre, enumerating no fewer than twelve defects of construction in regard to danger from fire. Among these he specially mentions the introduction of shops into the side of the building most suitable for providing easy means of exit, for the purpose of securing a rental of 35*l.* a year only, so that for the sake of this small sum the audience were placed in continual additional jeopardy. Three other special points noted by Captain Shaw are that there was no provision made for dealing with an outbreak of fire in the flies, which was the very part where the greatest danger necessarily existed; that many of the passages and corridors which, according to the agreement and understanding, were to have been constructed of fire-resisting materials, supported and enclosed by brick walls, were of wood, enclosed by lath and plaster or by match-boarding; and that the exit from the stalls and dress-boxes, as originally designed, was cramped and tortuous, and was only partly rectified by the emergency exit, which brought the occupants of those parts into direct conflict with the whole of the occupants of the gallery and a portion of the dress-circle. Captain Shaw places the real responsibility for the disaster with the licensing authorities, considering that having accepted the theatre as built, and having licensed it, they had no right after that to shift any part of the responsibility on the architect or on other persons, and that the jury in censuring the architect have laid the foundation of a precedent which would lead, if adopted, to endless difficulties; and he asks why they should not also include the contractor, the clerk of works, the masons, plumbers, &c. This is not quite logical, as all these are supposed to work according to the architect's directions; but in his main position, that the authorities who have licensed the theatre are, from that moment, the really responsible people, is, no doubt, correct. This, of course, does not in any way preclude the moral responsibility of the architect in all such cases, as the designer of the theatre; it only places the legal responsibility on the proper shoulders.

FROM a letter published in last week's *Athenæum*, it appears that Mr. Penrose, after visiting the Tiryns remains in company with Dr. Dörpfeld, and making a more minute examination of them, has come to the conclusion that the objections which have been made to the assumed antiquity of these remains, and which he brought under the consideration of a special meeting at the rooms of the Society of Antiquaries some little time back,* cannot be sustained. Mr. Penrose says in his letter (addressed originally to a member of the Hellenic Society);—

"The suspicious points [in regard to the remains at Tiryns and Mycenæ] were sufficiently brought forward in the discussion which took place in the summer of 1886, in the rooms of the Society of Antiquaries. I do not think that their discussion was unreasonable, but my late visit convinced me that they were all capable of explanation, and that both at Tiryns and at Mycenæ the parallel antiquity of Dr. Schliemann's recent discoveries and the great Pelasgic works can be established. An important point in the controversy related to the use of the stone saw. It was argued that the evidence of this instrument on some of the stones in the palace proved it of later date than the walls of the citadel; but I found that this argument broke down; for there were evident marks of its use on the pillars of the great gateways both at Tiryns and Mycenæ.

Another very natural difficulty arose from the badness of the construction of the palace walls and the smallness of the stones used. The walls are certainly more carelessly built than one would have expected, and are generally composed of small stones; but there are exceptions, and one remarkable stone, which forms the floor of the bath-room, would have required as difficult handling as any of the stones of the fortress. There is also a harmony both in direction and extent, as marked by special quoins and returns, between the external walls and those of the palace, which very strongly points out their contemporary construction."

* See full report in the *Builder* for July 10, 1886, p. 48.

THE Greek Government have decided to re-erect the great stone lion of Chæronea. Dr. Dörpfeld is to choose the exact spot, and to superintend this important work. The lion, it will be remembered, was seen by Pausanias. He says, speaking of Chæronea, "as one comes to the city there is the sepulchre of the Bœotians who fell fighting against Philip. There is no inscription, but the figure of a lion stands over it, a symbol of the brave spirit of these men. The inscription is left out, I suppose, because it was the will of the gods that the fortune of these men should not equal their courage." Of the 300 bodies originally buried there, 260 have been discovered, some with the lance-heads still adhering to the skull. The skeletons have been preserved by Fiorelli's gypsum method. The lion itself is a splendid specimen of fourth-century work. We are specially glad it is to be set up over the grave of the fallen, as it is one of those monuments which can only have its due artistic value when set up *in situ*.

M. KIESERITZKY, Sub-director of the Hermitage Antiquities, publishes,—we regret to say in Russian,—an interesting account of a statue of Aphrodite, recently acquired for the Hermitage Collection. The statue goes by the name of the Gatschina Aphrodite. Till quite lately it stood in that portion of the park of the Gatschina Palace known as the Menagerie. It is to the credit of the sculptor, M. A. Chijoff, that at the revision of the Gatschina sculptures, he called the attention of the Director of the Hermitage, M. A. A. Vassilichikoff, to the statue, and at his instance, "by the supreme goodness of his Imperial Majesty," it was safely lodged in the Imperial Museum. Truly, the climate of Russia is not well suited to the *al fresco* exhibition of valuable marbles. The statue is an excellent replica of the Capitoline Aphrodite type, with the accessory dolphin of the Medici type. It is in Parian marble, and of fine execution. It will certainly displace at once in public favour the wretched statue which goes by the name of the "Hermitage Venus." The most interesting point about the Gatschina statue is the head. The body accords so closely with the Capitoline statue that no further comment is needed. The head differs markedly. In fact, such resemblance as there is is purely external, *e.g.*, the arrangement of the hair. The head, M. Kieseritzky thinks, must be compared, not to the Capitoline statue, but to a head in the Vatican Museum (Museo Chiaromonti, No. A, 513), found near the Baths of Diocletian, and representing a later, more idealised, less animate Aphrodite type. We are bound to say we take the comparison on trust from M. Kieseritzky, whose excellent eye for style is well known; the phototype plate that accompanies his paper is so utterly bad that no judgment can be based on it.

HARROW SCHOOL has long been in possession of a valuable collection of antiquities presented by Sir John Gardner Wilkinson, partly during his lifetime and partly by bequest on his death. These antiquities consisted of Egyptian antiquities, Classical antiquities, coins and medals, and fossils and stones from Derbyshire. When some years back we paid a visit to the collection, specially with a view to the inspection of the Greek vases, we found the objects of our research covered with dust and dirt, muddled up with fossils and odds and ends of every description, in the Vaughan Library. A boy must, indeed, have had a keen archæological "flaire" to discover their merit. But as regards the Classical antiquities, Mr. Cecil Torr,—whose name, like that of another hero, should be written in golden letters on some Rhodian shrine,—has changed all that. With no small difficulty he got permission to attack the collection, mount, set up, and arrange the specimens, and have them transferred to the Museum of the School, where they are now duly exhibited. The catalogue of the Egyptian antiquities is by Mr. Budge, of the British Museum; that of the Classical antiquities by Mr. Torr himself. Both are printed at Mr. Torr's expense. Mr. Torr's catalogue will, of course, be mainly in use by visitors to the Harrow Museum. It is well, however, that it should be widely known that the book is much more than a catalogue. To begin with, there is an excellent preface marked by the writer's well-known vigour of view and directness of expression, and dealing with that now momentous question, the claims of archæology in classical education. In the plainest fashion he gives a boy or a beginner of any sort directions how to set about Classical archæology, what books to read, and what to expect to get out of them. Further, each department of antiquities is preceded by a few introductory remarks, just enough to set the student looking aright; so that in vases, bronzes, terra cottas, gems, there is, at least, a solid foundation laid, and in the matter, *e.g.*, of Etruscan moulded vases and Samian red ware, just the information is given which the student often looks for in vain. We would only suggest the addition of a very brief bibliography of the subject, just to point boys on to the right literature.

WE have received from Mr. Stephen W. Williams, F.R.I.B.A., a reprint of his interesting paper read at the last annual meeting of the Cambrian Archæological Association, at Denbigh, August 23rd, 1887, on the remains of Strata Florida Abbey, in Cardiganshire. This was an abbey of Transitional date, of which the principal portions now standing are the west doorway, with a very deeply-moulded round-arched doorway, and the north-west portion of the north transept, but there appear to have been sufficient remains to make out the complete plan of the church, which is the usual plan of a Cistercian church, with a small square-ended choir, of no great length, and transepts with a series of six chapels, three on each side, on the eastern face of the transepts; these chapels are square-ended, not apsidal, as they are often found. Mr. Williams makes out the nave piers to have been large square piers with semi-cylindrical shafts of large size at each end, the whole giving a large oblong mass of masonry more than twice as long as its thickness; on the sides towards the aisles each pier had a flat pilaster or respond. The bases of the tower piers have been uncovered, and it is found that one peculiarity is that the west and eastern piers did not correspond; the western piers ranged with the thickness of the nave arcade piers, but the eastern ones, standing between the chancel arch and the range of openings of the transept chapels, are of larger area and of greater elaboration of plan. We should think it doubtful whether the western piers of the crossing were, as shown on Mr. Williams's plan, of less mass and length east and west than the ordinary piers of the arcade; it is certainly quite contrary to what we usually find in the tower piers in early work. Mr. Williams says, "Fragments found in the immediate vicinity of the piers which have been uncovered lead me to believe that the nave arcade was of pointed arches richly moulded, and carried on square piers with semicircular attached shafts on the line of the arches carrying the inner members, and with three-quarter nook shafts in square recessed jamb-moulds carrying the outer members of the arcade." He has not as yet found on the outer walls of the aisles any responds corresponding with those on the piers. From fragments found in the neighbourhood of the crossing it is believed that the tower arches were pointed and richly moulded.

SOME recent numbers of the *Venice News*, an English journal published at Venice, contain a short series of papers by Signor Boni, translated from *La Riforma*, on the ancient building called the Fondaco dei Turchi. The object of the paper is partly to give a history of the old building, and partly a history of and a protest against the restoration of it, which has practically amounted to rebuilding it. The ancient building had fallen into decay, but Signor Boni's position is that decay might have been arrested and the remains of the building preserved. Instead of this, it was determined to restore it, and, according to

Signor Boni (who, however, takes rather a strong view of these matters), it was rebuilt from the foundations, the sculptured details touched up and improved, and the restoration, commenced in 1860, carried out "so scrupulously, as not to leave us the hope of finding any part, even the smallest, which we may look upon with confidence as a relic of the ancient palace." The Fondaco is now, says Signor Boni, faced with marble, but an old workman who remembered the ancient structure, told him the primitive walling was brick with stone dressings. We confess we should take this *cum grano*. The marble seems more probable. Some remarks on the towers which are now added we may quote at length :—

"Any one who compares the modernised façade of the Fondaco with that which is seen in photographs of the ancient palace will perhaps find himself embarrassed on account of the addition to the side towers, and the ornamental embattling of the cornice. The existence of these towers is entirely proved by the wood engraving of 1500, once attributed to Dürer, and although the new towers cannot be considered as authoritatively correct, it is interesting to remember that the early Venetian palaces must have had the appearance of massive structures of brick, with strong towers at the angles, secure against the frequent popular revolutions, and against the incursions of the pirates, *pagana et crudelissima gens*. These forms became familiar to the minds of the Venetians, and two or three centuries afterwards, when the city became rich and tranquil, when there was no more fear of incursions, and Venice began to beautify itself, the principal features of its primitive palaces were preserved, and they were adorned by clothing the brickwork, or by building in sculptures or discs of precious marbles, developing the vast breadth of brick wall into a series of columns brought from the East, and lightening and decorating the battlements."

THE twenty-first Annual Convention of the American Institute of Architects was held at Chicago on the 19th, 20th, and 21st of last month. A long and interesting communication or report on education was presented by the Secretary to the Committee on Education, in the course of which it was remarked that "Much has been said in regard to the elevation of the profession by a State system of examination and licences for architects, but it seems to me that this but partially tends towards the end in view, and that a more certain method is to raise its foundations by making the professional training as good as possible, than to lift it by the hair, so to speak, by a compulsory examination. Real improvement will only come thaough the better education and preparation of its members, however obtained, and by the resulting gradual elimination of ignorant men"; an opinion from the other side of the water which may be of some interest here at the present moment. Mr. Adler read a paper on the "Paramount Requirements of Large Theatres," giving a very able and comprehensive survey of the subject, though containing nothing that would be new to most of our readers.

WE have more than once called attention to the need of making the underground railways a connecting chain between the great railway termini of the metropolis. An advance has recently been made in this direction, though it should have been done long ago. We allude to the opening of a subway between the Great Western station and Praed-street station. Liverpool-street and Paddington on the north are now, therefore, directly connected with the Metropolitan Railway. It should be possible to make some kind of connexion with Euston, which is in many respects the most "ungetatable" terminus in the metropolis, being unconnected with the underground lines and out of the direct route of omnibuses.

THE thirteenth volume of the "Proceedings of the Association of Municipal and Sanitary Engineers" contains a number of useful papers on sanitary and practical subjects, including one on Cremation, by Mr. Eassie, and on the Construction and Maintenance of Macadamised Roads, by Mr. J. W. Brown. Mr. Jones's paper on Refuse Destructors, with the discussion which followed, of which we have recently given the substance. The volume includes also papers on the Drainage of Portsmouth, by Mr. H. P. Boulnois; description of the Sanitary Works of Kidderminster, by Mr. A. Comber; Asphalte and Concrete Pavements, by Mr. Strachan, &c. A great deal of the last-named paper, and of that on the Portsmouth drainage, also appeared in our columns at the time they were read.

IT has been decided that the architectural section of the Glasgow Exhibition, for which a gallery has been set apart in the Exhibition buildings, is to be distinctly international in character, and an effort will be made to get together representative works from different countries. It has been also decided to admit photographs of work designed by the exhibitor only, and accompanied by drawings, if possible. The committee will also endeavour to get together some good models, and a limited selection of decorative objects, church-plate, &c., of the highest class, in order to give further interest to the Architectural Gallery.

THE Mitcham Linoleum and Floor-cloth Company, we are glad to see, are offering prizes to a considerable amount for the best designs suitable to linoleum and floor-cloth. There is every room for improvement on the commonplace designs usually seen, and it is perfectly possible to render linoleum an artistic covering instead of a mere collection of commonplace trade patterns, and that without even adding to the expense of manufacture. The awards will be made by the Directors of the Company, assisted by Mr. G. H. Birch. It is to be hoped that some good designs will be secured in response to an invitation the spirit and intent of which are highly to be commended.

THE acquittal of the driver and fireman of the train which caused the Hexthorpe calamity will have come as a surprise to many who read the evidence given before the Coroner; but there can be very little doubt that this leniency towards the men who immediately caused the disaster is really a kind of indirect expression of the opinion of the jury that the company were even more to blame than the men, and that after the evidence which had been given as to the confusion in signalling, and the culpable laxity and want of method in the arrangements made for an occasion of extra traffic and consequently extra danger, the blame resting with the higher authorities of the Manchester, Sheffield, and Lincolnshire Railway was so great that it would have been unfair to make scapegoats of the engine-driver and fireman. We do not see the logic of this. The extra difficulties put in the way of the men, and the want of properly worded and methodical instructions to them, would have been a good reason for a mitigation of sentence; but there is no doubt from the evidence that the driver was careless and did not see or attend to signals which he ought to have seen; and the culpability of his superiors does not remove all responsibility from him. The case is a very discreditable one to the railway company principally concerned, and, though they cannot be made criminally responsible, we hope they will not be allowed to hear the last of it with the close of this trial.

Sanitary Institute of Great Britain.—At an examination, held November 10th and 11th, sixty-two candidates presented themselves,—eight as Local Surveyors and fifty-four as Inspectors of Nuisances. The Institute's Certificate of Competency to discharge the duties of Local Surveyor was awarded to Messrs. Adam H. Campbell, John W. Hunt, and Donald Grant Macdonald. The Institute's Certificate of Competency to discharge the duties of Inspector of Nuisances was awarded to Messrs. W. J. Addiscott, F. A. Aris, R. Bell, R. Butland, W. S. Devey, T. J. M. Flower, W. F. Fordham, C. T. Gardner, T. W. Golds, W. Grant, H. Hilliam, R. A. Houghton, P. Hoy, R. W. Jasper, D. Jones, T. A. Kitchen, J. W. Lear, W. Lee, D. G. Macdonald, A. McNair, S. Minty, A. R. Patrick, A. Perry, G. M. Pettit, J. Shelton, T. D. Stewart, J. Taylor, T. Thomas, E. Winter, R. White, and W. Yeo.

THE SURVEYORS' INSTITUTION.

MR. W. J. BEADEL, M.P., who is President (for the second year) of the Surveyors' Institution, delivered the opening address for the session on Monday evening last. After a few introductory remarks he said :—

I do not forget that with my present term of office closes the second decade of our existence as an Institution. It is not necessary to dwell at length upon what has been accomplished during that comparatively brief period in the life of a professional society; but this may be said, without fear of contradiction, that this Institution is an instance of progressive prosperity difficult to match elsewhere, whether regard is had to its early incorporation, to the status it has secured for its members, or to the extent to which it represents the profession in whose interests it exists. I wish it were possible to look back over the twenty years of our annals with unmixed satisfaction. As in all human affairs, if we have successes to chronicle so have we losses to deplore. Happily, our first President, Mr. John Clutton, is still with us (applause), and long may he remain so; but we cannot help calling to mind on occasions like the present the many honoured contemporaries who have assisted in building up this Institution, and who are no longer by our side. . . . .

Before passing to more special subjects, let me refer to an event which makes the year 1887 an *annus mirabilis* in our history,—I allude to the Jubilee of the reign of one of the most illustrious and most beloved of Sovereigns. This Institution, incoporated under a Royal Charter granted by her Majesty, availed itself of the opportunty of assuring her, in a dutiful address, that the surveyors of England were among the most loyal and devoted of her subjects (hear, hear).

The mention of the Jubilee year naturally leads one's thoughts to the vast changes in all matters relating to property which have taken place during the fifty years of Queen Victoria's reign. This period (comparing great things with small) as nearly as possible coincides with the age of the Land Surveyors' Club, which was, in a certain sense, the nucleus out of which this Institution was developed. It is no reflection on the memory of those who founded that Club to say that they would have been astonished could they have foreseen the enormous multiplication of transactions in every kind of property which has distinguished the intervening period of fifty years, and which all fall more or less within the province of the surveyor of the present day.

This great increase in the extent and variety of the surveyor's duties necessitates a more careful and accurate training for his life's work; and it is the boast of this Institution that it made haste to recognise the fact by making provision for the careful education of its professional successors. Among the Students whom I see before me is seated, no doubt, a future President of this Institution. If so, I hope, and am sure, that he will remember in his Inaugural Address to do us the justice of admitting that we did the best we could in our day to secure for those who will follow us the position to which we consider the surveyor entitled, but which he cannot attain without the special and exact training long looked upon as necessary in other professions (hear, hear).

It is impossible to exaggerate the importance of our Examinations with reference to the future of the Institution. When we applied for and obtained our Charter of Incorporation in 1881, it was resolved, after long and careful consideration, to postpone the compulsory Examination for Professional Associates for three years from the date of the Charter, and for Fellows for ten years from the same date, meanwhile introducing both Examinations in a voluntary form, in order to avoid the shock of a sudden transition from the old state of things to the new. Ten years seemed a period remote enough in 1881, and, as a matter of fact, was looked upon as too remote by some of the more sanguine promoters of our Examination system. More than six years of this period has, however, since expired, and we are now, so to speak, almost within sight of the time when our system of admitting members will undergo a complete change by the operation of Clause 29 of our Charter, which finally closes, in a year or two's time, the access to Professional Membership against all who are unwilling to submit themselves to the Examina-

tion tests. It has never been, and I trust never will be, the policy of this Institution to canvass for new members; but it is only just to remind those of our professional brethren who are eligible for membership, but who, being of mature years and of established professional position, are not likely to offer themselves for examination, that the period within which they can join the Institution without examination is rapidly drawing to a close under the terms and conditions of the Charter. I find that an impression prevails to some extent that the compulsory Examination for Fellows has already come into force; and I think it well, therefore, by this explanation to dispel the misapprehension.

It will be of some interest to review the progress made during the last six years towards leavening the Institution with examined men, in anticipation of the more exclusive system towards which we are hastening. Since the year 1881, 503 candidates of all classes have offered themselves for examination, of whom 345 have satisfied the Examiners. Of those 345, 185 were candidates for Studentship and 160 for Professional Membership. Of the 160 who have passed the Professional Qualifying Examinations, 127 (a large proportion) have since been elected, or are in process of election, as Members, and a large majority of the remaining 33 are taking steps for joining the Institution. Placing these 127 Members, by Examination, in comparison with the whole Professional Membership (that is, excluding Honorary Members, Ordinary Associates, and Students), it appears that the Members who have actually qualified by Examination, at the present date, already amount to nearly 15 per cent. of the whole Professional Membership, which, as I have already said, represents a very respectable leaven of the new order of things (hear, hear). This calculation leaves out of account about 100 Students who have already passed the first step in the Examination system.

It is impossible to forecast what the total increase in the number of Members will be (it will probably be considerable) in the next four years, but assuming, as we are justified in doing by statistics, that not less than forty will pass the Professional Examinations during each of those four years, it will be seen that we shall have on our Register at the end of the period the names of upwards of 300 Members possessing a certificate of having passed an Examination of the most exhaustive but most practical description in every kind of professional knowledge not absolutely dependent upon long experience.

It may be stated in connexion with our education system that the Institution carefully abstains from anything in the nature of teaching functions, and it is, therefore, with the greatest satisfaction I record the fact that the most cordial working relations exist between ourselves and valuable centres of professional instruction, such as the Royal Agricultural College, Cirencester, and the College of Agriculture, Downton (hear, hear).

Altogether, the Institution has reason to be proud of the success which has attended its efforts to secure a sound technical education for the rising generation of surveyors,—a success far beyond the most sanguine anticipations; and it only remains to urge all surveyors and land-agents of standing (whether members or not of the Institution) to co-operate with the Council in this direction by seeing that their sons, their pupils, or their assistants do not lose the opportunity which our Examination system offers of obtaining certificates of competency, the value of which, in relation to their future career, must be admitted (hear, hear).

The remainder of Mr. Beadel's address was devoted to agricultural matters, and to the legislation or proceedings in Parliament in relation thereto. We quote one passage from this part of the address:—

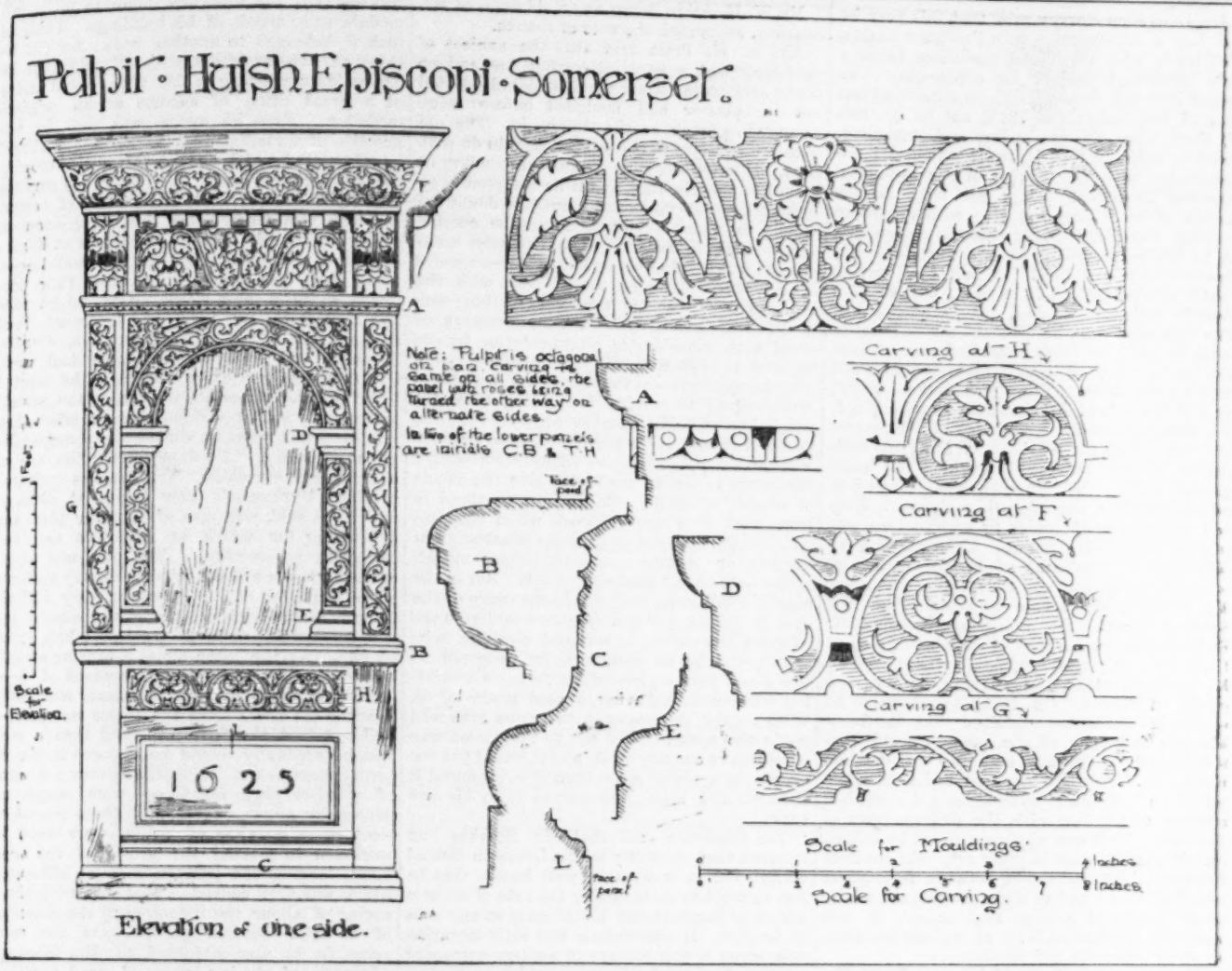
The Select Committee on Forestry, to which I alluded last year, being reappointed, held another series of sittings, during which Mr. John Clutton and another of our members, Mr. Evan Powell, were called upon to give evidence, and a report of considerable value and interest has been issued, taking up very much the line of the views put forward by our Secretary, Mr. Rogers (hear, hear). The Committee, whose recommendations cannot be said to err on the side of extravagance, were apparently not altogether satisfied as to the possibility of establishing a School, and propose, as an intermediate step, to constitute a Board of Forestry, composed of delegates from various bodies, such as the Royal Agricultural Society of England, the Highland and Agricultural Society of Scotland, and this Institution. A Board so constituted would, no doubt, be better fitted for dealing with the subject than a sub-Department of State, and might be trusted to carry on its operations on sound and practical lines, and with a view to actual needs and possibilities. Steps are, I understand, being taken to ascertain the extent to which the societies invited to send delegates to the Board are prepared to co-operate in giving effect to the recommendations of the Committee. I believe I am not saying too much on behalf of our institution in stating that we shall be willing to do anything in this or in any other way which may seem to offer a prospect of bringing relief, however small, to the landed interests of this country (applause).

On the motion of Mr. E. P. Squarey, seconded by Mr. Wheeler, Q.C., a vote of thanks was given to Mr. Beadel for his address.

LUTON SEWAGE WORKS.

A Home Counties District Meeting of the Association of Municipal and Sanitary Engineers and Surveyors was held at Luton on Saturday, the 29th ult. The members met in the Council Chamber, there being present Mr. J. Gordon, of Leicester (President), Mr. Lewis Angell (West Ham), Mr. Ellice Clark (West Sussex), Mr. J. P. Barber (Islington), Mr. John Lund (Bedford), Mr. E. Sharman (Wellingborough), Mr. G. Cannon (Aylesbury), Mr. W. H. Wilds (Hertford), Mr. J. P. Norrington (Fulham), Mr. C. Jones (Ealing), Mr. W. Weaver (Kensington), Mr. G. Weston (Paddington), Mr. W. B. Bromley (Heston and Isleworth), Mr. T. G. Lawson (Southgate), Mr. W. Santo Crimp (Wimbledon), Mr. R. S. Lloyd (Messrs. Hayward Tyler & Co.), Mr. T. de Courcy Meade (Hornsey), and others. Also the Mayor (Councillor H. Blundell) and other members of the Corporation, Mr. W. H. Leete (Borough Surveyor), Major Flower (Consulting Engineer of the Lee Conservancy Board), and other gentlemen.

Mr. W. H. Leete, Borough Surveyor of Luton, read a paper on "Luton Sewage, past and present." The population at the present time is about 30,500; rateable value, 104,316*l.*; municipal area, 2,600 acres; and there are thirty miles of roads and streets. Luton is situated at the head of the Lea watershed, and above the intake of the New River Company and the large lakes on Luton Hoo estate. It has been jealously watched by the riparian authorities, and precautions constantly enforced to prevent pollution of the Lea and lakes. Of recent years, during droughts the Lea has been almost dried up. About the year 1800 there were only five streets in Luton, and within three years of that date the first bridge was erected over the stream. The original industry was malting, no fewer than sixty kilns being at one time worked, also a few tanneries, and there were six water corn-mills on the stream. The straw-plait industry was introduced by Lorraine plaiters, who left Scotland, owing to troublesome times, in the reign of Mary Queen of Scots, and the trade has now an annual turnover of 1,750,000*l.* In 1821 the population was 2,980, and there were 586 houses. Up to 1850 the drainage was by open ditches and drains direct into the river. The Public Health Act of 1848 was adopted, and the first meeting of the Local Board was held on August 12, 1850. The owner of the Luton Hoo estate obtained an injunction to restrain the Authority from polluting the stream, and in 1856 a scheme was initiated, 1½ acre of land between Park-road and Windmill-road being purchased, and outfall works arranged, with engine and boiler, receiving tanks, filter-beds, and lime-mixing apparatus, in connexion with which an intercepting sewer was constructed about a mile in extent, on the advice of Sir Joseph Bazalgette. Extensions were made from time to time. In 1868 the Authority was served with notice to conform to the Act (cap. 154, July 30, 1868) for the preservation and improvement of the Lea. By the efforts of the late Mr. E. O. Williams, Alderman Higgins, and Mr. G. Bailey, Clerk to the Board, a clause was inserted in the Act, allowing Luton to continue discharging sewage water into the river after purification by Higgs's process, or such other which from time to time might be in use as the best known practicable process, providing they did not increase the sectional area of the existing sewerage and drainage works. From time to time, to meet the wishes of the Conservators, several processes were applied, such as Whitthread's, the Native Guano Company's, and others, but all failed to improve on the simple lime process. In rainy seasons the sewage is very much diluted with subsoil and spring water, and is continuously deeply coloured by dyes used in the local trade. During the past six years plaiting has become almost obsolete, owing to the enormous importation of cheaper foreign plaits, and the industry consists of making up the foreign-made plaits. This has driven the villagers into the town, and created a great demand for cottage property. Finding that the sewage could not be satisfactorily clarified by the use of chemicals and precipitation, the Authority, recently changed from a Local Board to a Municipal Corporation, in 1878 obtained a loan of 10,000*l.* for further works, which included the removal of the last remaining water-mill on the stream, providing a new outfall, purchasing five acres and leasing 17¼ acres of land, which was terraced and drained, &c., laying down new machinery with rising main. After using chemicals and precipitating the solids, the partially clarified sewage was pumped upon the land, but the effluent remained highly coloured; 800,000 gallons of sewage were pumped six days each week. Chemical treatment was again tried, viz., Hill's salts of magnesium and tar, with lime, the patentee having the works at his disposal for six months, only to fail more signally, leaving the works in a filthy condition. Mr. John Hanson's black ash was also tried, but was found to be quite ineffective, not in the least touching the colour. Between 1876 and 1885 the population increased one-third, and complaints again arose. After much inquiry, the Town Council acquired the present farm, which comprises 71 a. 12 r. 27 p., at an average price of 128*l.* per acre. It adjoins the borough boundary, and its extremity is fully a mile beyond the pumping-station. Its greatest height is 184 ft. The soil, for the most part, has a shallow staple on a chalk base, somewhat loose, and free from large fissures. The land is served by a 16-in. rising main, 1,541 yards long, prolonged by a 12-in. main, 220 yards in extent, with eleven valves serving eleven levels from 10 ft. to 184 ft. There are four earth-made tanks, two at 62 ft. height, one at 117 ft., and one at 125 ft., each having a small sludge bed. The tanks will hold 1,023,700 gallons, and may be filled twice in twenty-four hours. They cost 9*s.* per 1,000 gallons. The conduits from the various levels are simply earth cuts to a fall of 1 in. per chain, following the contour of the hill-sides. They extend slightly over three miles, and cost 8¾*d.* per yard. About 9 acres at the foot and side of the hill are levelled and ridged to secure uniform distribution of sewage without any large accumulation at the foot of the hill. The cost was 16*l.* an acre. The chief crop is rye-grass, with about 16 acres arable, growing corn for the Corporation horses. As to crops, some years we have been able to show a profit, but last year's superabundant produce caused the crops to be almost given away, entailing a deficit. As the sewage enters the works it passes through a series of screens. Three tanks, holding about 700,000 gallons, are used to hold the night flow. They are connected with a well in the new engine-house, 9 ft. in diameter and 14 ft. deep, into which the 18-in. suction-pipe of the new pumps is carried. The boilers are equal to 130 horse power. The new engines are 100-horse power coupled horizontal rotating high-pressure condensing engines. The pumps are 19¼ in. diameter, of the horizontal double-acting type. The new plant is capable of raising 1½ million gallons of sewage per day of twelve hours, 200 ft. high. As to coal consumption, twenty days' working at various levels showed a cost of ¼*d.* per thousand gallons, taking coal at 11*s.* per ton on the works. Two days' consumption of coal working to the highest lift, showed a cost of 7-16ths of a penny per 1,000 gallons. The new machinery was designed and executed by Messrs. Hayward Tyler, Howard, & Co., of London and Luton, the contract sum being 2,760*l.*, which, with a few extras, will possibly bring the amount in round figures to 3,000*l.* The results of the working from May 21 to the present time have been very satisfactory.


Pulpit · Huish Episcopi · Somerset.
Elevation of one side.
Scale for Elevation.
1625
Note: Pulpit is octagonal on plan. Carving the same on all sides. The panel with roses being turned the other way on alternate sides.
In two of the lower panels are initials C.B & T.H
Face of panel
Carving at H
Carving at F
Carving at G
Scale for Mouldings.
Scale for Carving.
Inches

Luton now disposes of its entire sewage without an outlet to the river. The dry-weather flow of sewage in twenty-four hours is 820,521 gallons; in wet weather it is more than double. The old engines repaired will raise 800,000 gallons in twelve hours. With them and the new plant we can lift 2¼ million gallons in twelve hours. The town water supply equals 750,000 gallons per day. A few months ago there were over 2,000 cubic yards of sludge about the pumping station. It has all been removed to the neighbouring farms, and the sludge is now daily pumped with the sewage to the new farm a mile distant. At the request of the Town Council, the whole of this work was designed and carried out by himself (Mr. Leete), excepting the machinery, the design for which was the result of a competition. The engine-house, boiler-house, shaft, &c., cost 2,173*l*. We have been able to keep within the estimate (20,000*l*.), and so far the result has been quite satisfactory. The Association may have viewed more scientific work as regards the construction of the tanks and conduits, but larger outlay was avoided on account of the distance of the farm from the town and the river, particularly as we have a splendid chalk base of a possible depth (as has been stated by geologists) of 300 or more feet.

The President (Mr. J. Gordon, of Leicester) invited remarks from the Mayor and Major Flower, whom he described as the High Police Commissioner of the River Lea.

The Mayor briefly referred to the favourable circumstances which had attended the carrying out of the scheme by Mr. Leete, and the experienced service rendered by Alderman Higgins and others.

Major Flower said that from much experience he had come to the conclusion that land was the only absolute purifier of sewage matter so as to render it fit to be discharged into a river from which people drew their drinking-water. He had great respect for many chemical processes, and they would meet the needs of some places, while being totally inadequate in others. At Luton for a time chemical treatment supplemented by filtration on a small area of land sufficed, but ultimately the sewage became so loaded with chemicals and dyeing refuse as to render it exceedingly difficult of treatment; and chemical processes, which might be sufficient in other towns, had no effect whatever upon it. He felt that he should hardly be doing his duty as an official if he did not say how pleased those whom he had the honour to serve were with the honourable and thoroughly English way in which Luton had met the necessities of its position.

The party then drove in carriages to the sewage works, where they inspected the machinery and arrangements. They then proceeded to the farm and inspected the irrigation scheme, which was highly commended for its simplicity and effectiveness. A visit was then paid to the waterworks, for the inspection of the engine and pumps, which were highly approved. On returning the visitors were shown over the factory of Messrs. Carruthers Brothers, and witnessed the various processes of manufacturing straw and felt bonnets and hats. It had been intended to inspect the dye works of Messrs. T. Lye & Son, but time did not allow of it.

On returning to the Council-chamber the visitors and members of the Corporation were entertained at luncheon by the Mayor.

Roman Frescoes purchased by Germany. The famous frescoes in the Casa Bartholdi in Rome, by Cornelius, Overbeck, Schadow, and Veitz, representing the history of Joseph, which were purchased some time ago by the National Museum of Berlin, are now being taken out of the walls by Professor Bandini prior to their despatch to Berlin.

Restoration of the Cathedral of Upsala. The restoration of the Cathedral of Upsala, the oldest edifice of this kind in Sweden, which has been in progress for some years, is nearing completion. The work, which involves the rebuilding of the principal tower, destroyed by fire many years ago, is being carried out under the supervision of Herr F. Langlett, architect to the Swedish Government, and a sum of 10,000*l*. has already been expended thereon.

PULPIT, HUISH EPISCOPI, SOMERSET.

This is an interesting example of Decorative work of the early part of the seventeenth century. Some of the ornament is very good of its kind, and the general effect is rich; but the curiously entomological appearance of the reversed feature shown in the upper band of the detail drawings is certainly not to be commended; the lower portion looks more like the body and hind legs of a beetle than like any form derived from vegetation, and the curves of the different portions do not harmonise with each other. The other bands of ornamental design are much better in this respect.

THE ARCHITECTURAL ASSOCIATION.

The second meeting of this Association for the present Session was held on the 4th inst. in the meeting-room of the Royal Institute of British Architects, Mr. John Slater, B.A. (President), in the chair.

The following seventy new members were elected, viz.:—

Messrs. G. S. Fleetwood, A. C. Williams, A. H. Knott, P. D. Smith, J. R. Clunis, A. H. Moore, P. A. Grinstead, E. R. Sequeira, E. D. Webb, A. C. Walker, J. Peter, G. H. Fox, T. P. Simpson, J. Gethin, F. A. Huntley, A. Corderoy, W. H. Brooks, F. Carless, A. T. Pope, B. C. Bailey, E. Carter, C. E. Gray, A. P. Cocks, C. H. Strange, W. H. Winder, W. M. Paton, E. Archer, R. Scarfe, P. L. Waterhouse, E. G. Angel, O. Oertel, Ernest H. Selby, J. E. Jefferson, A. Gladding, H. G. Robins, F. J. Waller, A. C. Henderson, J. F. Parker, H. Rice, F. H. Greenaway, H. N. Smith, C. N. Johnson, E. W. Wonnacott, F. T. White, H. B. Young, J. T. Masters, J. G. Whyte, G. L. Orme, H. W. R. Shofield, C. H. Cheston, A. Field, A. B. Jackson, F. T. Davys, C. W. Riches, T. P. Clarkson, A. T. Griffith, S. F. Bartleet, A. E. Habershon, H. A. Green, P. G. Eade, W. G. Ingram, C. A. B. Smith, W. J. Roome, A. M. Wakley, J. Angold, D. Gibson, F. E. Hollinworth, E. H. Hill, R. B. Lindsey, and A. T. Walmsley.

Mr. P. J. Marvin was next elected to fill the vacancy on the Committee caused by the resignation of Mr. Dawber.

Mr. J. C. L. Sparkes next read a paper on "Architectural Modelling," which we printed last week (p. 665).

In the course of the discussion which followed,

Mr. Lawrence Harvey said that this year he had had a conversation with Professor Lasius, of Zurich, who considered modelling to be a very important subject for architects. The reason was that the sculpture on a building was part of the design, and could not be ignored. If, then, they did not understand modelling, another man brought in work which did not harmonise with the design of the architect. Another important thing, not only in the matter of modelling, but also with regard to carving, was that a totally different design had to be made, according to the material. Mr. Sparkes had mentioned the fact that marble could not be imitated in clay, nor could a marble design be carried out in Bath stone. The ornament must be different, and allowance must be made for thick instead of thin arrises. He might refer to a new invention of wood carving for doors. There was first the panel, on which woods of different colours were glued, the ornaments being carved out of the masses of wood. That got over one of the great difficulties in wood-carving, in working the background even. Mr. Sparkes had referred to colour, but what was colour in sculpture? They had to learn what colour in architecture was without paint being put on. Colour meant the difference of treatment of surface so as, by contrast, to bring up one surface above another. He would quote a case to show what Mr. Sparkes meant. He remembered seeing M. Guillaume carving a bust of the Archbishop of Paris, who was murdered by the Communists. M. Guillaume said he was carving the bust as a study of colour. On being asked what he meant, M. Guillaume explained that the Archbishop's face was of the most refined and intellectual character, and full of delicate lines. To bring out those he had treated the mitre perfectly plain so as to have the polished surface contrasting with the delicate work of the face. That was what was meant by colour, and it was the same in every art,—the contrast between light and shade, between seriousness and liveliness; and as sculpture was one of the great means of getting that colour, it was perfectly indispensable for an artistic architect to study sculpture and carving.

Mr. Leonard Stokes said he agreed with Mr. Sparkes that modelling was very necessary to the architect, as he was expected to do a great many things other people could not do. For instance, he had to see round a corner, and unless he was able to model in his mind he could never realise what his building would be like. So long as architects could only grasp one elevation at a time their buildings would not be as satisfactory as if they were able to grasp the block or modelled mass in their minds. To be able to model detail was no doubt very useful, but more attention should be paid to form in masses, and perhaps less,—although these, too, were very important in their proper place,—to small matters such as panels. He agreed as to the necessity of the architect being able to show a modeller how a thing should be done, although the modeller might not always like it. Mr. Stokes concluded by proposing a vote of thanks to Mr. Sparkes.

Mr. H. D. Appleton inquired whether Mr. Sparkes had had any architectural students in his schools, and, if so, what amount of success they had achieved? It seemed to him that if architects were to be artists, and be capable of doing all the work they had to superintend, the life of an architect would not be worth living. He seconded the vote of thanks.

Mr. Frank Jones asked Mr. Sparkes whether he preferred modelling to seeing the building in perspective? He did not quite understand, too, whether Mr. Sparkes wished a model to be made of the whole building, or merely of some of the ornamental detail, of which they might get an idea if it were drawn out full size.

Mr. E. Swinfen Harris remarked that if architects wished to make sure that their buildings would be effective in appearance of outline, there was nothing so excellent as modelling them as a whole. In support of that, he might mention the buildings of Mr. George Devey, which were the results of models made to scale in wood. If the detail was to be beautiful, so should be the building as a whole. Nothing, therefore, was so important to the members of the architectural profession as to understand the modelling of their buildings to a relative scale, so that they might form an idea of the effect produced before all attempts to improve t were too late.

Mr. W. H. Atkin Berry, as an old pupil of Mr. Sparkes, supported the vote of thanks.

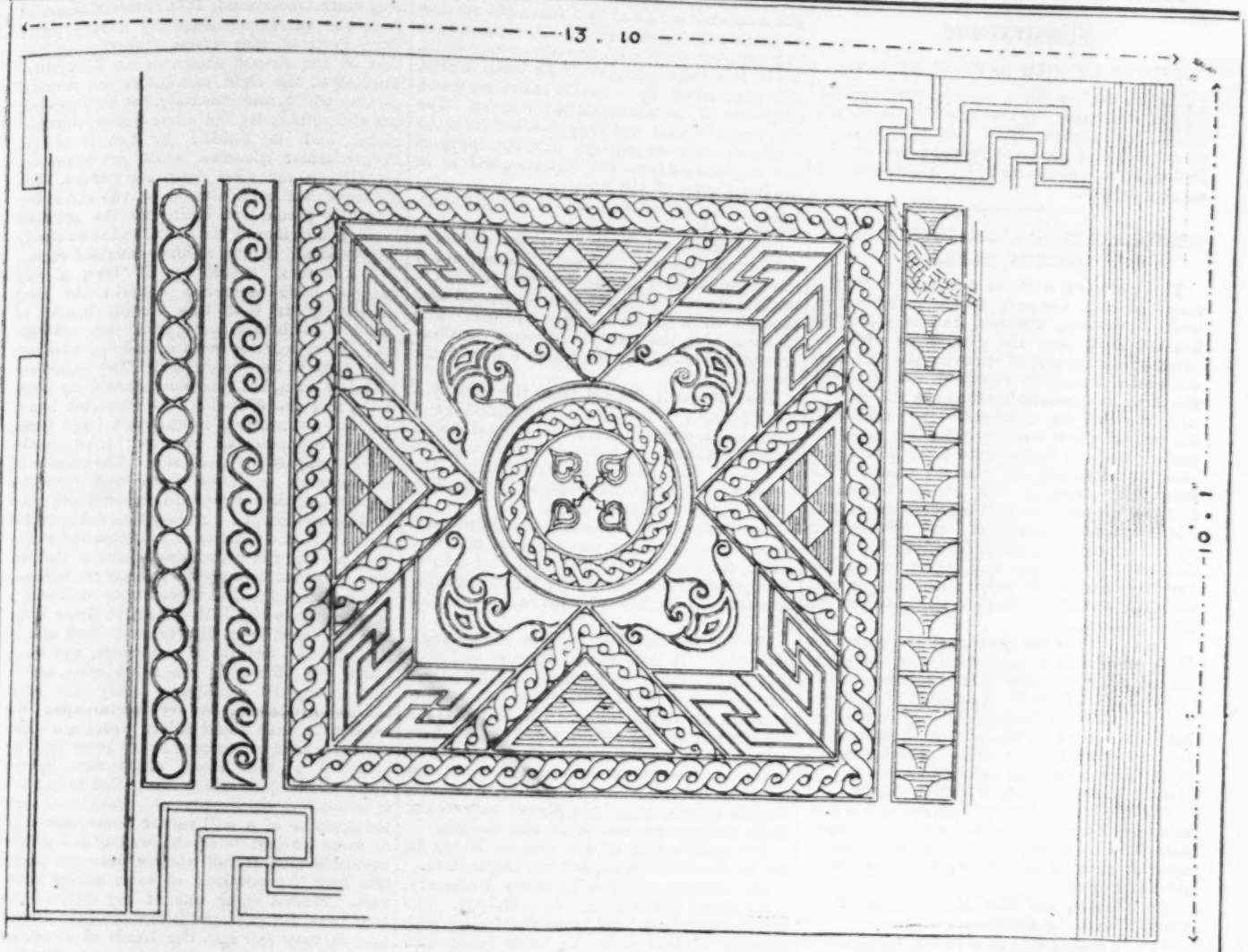
Mr. H. W. Pratt said that the subject of modelling was a very interesting one, and no doubt architects did not see their details carried out in plaster and modelled before being executed as much as they might do. The old question of expense had a great deal to do with that. If modelling were taught in secondary or technical schools they might be tempted to go in for a little too much ornament. No doubt the extent to which modelling might be carried would be an inducement to apply plaster ornament to wood backgrounds, and so on,—a species of ornament requiring to be used with the utmost care. Much of that kind of thing was to be seen now-a-days in chimneypieces of wood with considerable ornamentation by the application of plaster, which, he considered, was a wrong application of the principle of modelling. With regard to carving in marble, stone, or wood, how did Mr. Sparkes propose that the modeller should go to work in order to produce what was required in those different materials? Modelling in plaster would not give the effects of marble or stone. He could understand in large work or in moulded work, where they had not an opportunity of judging the effect at great heights, or certain positions, proper models made beforehand might be of use. But in the case of small work, well within the range of the eye, he did not see how plaster would give the effect of the particular material intended to be employed. As to sculpture, he supposed no one would place a piece of sculpture on a building without first having a cast made of it. With regard to ornament, the same man who made the model would not be the person who would carry out the work, and it would put the carver on a lower scale than if he produced it from his own brain, and carved it by his own hand.

The Chairman said that Mr. Sparkes had referred very modestly to the Lambeth School of Art, but it was pretty well known that he had as much to do in raising the tone of artistic labour in Lambeth and Kennington as any man in London. It was curious how little attention was given in this country to matters connected with architectural education, which were considered of importance abroad. He believed that in the École des Beaux Arts in Paris, as well as in almost every Continental and American Architectural School, modelling was one of the subjects young architects were compelled to study. And not only was modelling useful from an artistic point of view, in the arrangement of details, but it was also of extreme use constructionally. It was a matter of difficulty to tell if the roofs were all right from the drawings, and nothing could be more educational than for the student or office assistant to model his roofs in a piece of soap, or some similar substance. Every one, he supposed, would agree with what Mr. Sparkes had said about material. It had struck him, when listening to Mr. Harvey's remarks about wood, that he was advocating the use of that material in much the same way as plaster was used in sgraffito decoration, which was not a proper treatment for wood. Mr. Pratt supposed that no one would put sculpture upon a building unless he had casts made first, to show the effect; but they had only to walk through some of the London streets to see that such was not the case. Anything more incongruous than some of the huge pieces of masonry or plaster on London buildings could hardly be imagined. Something had been said as to Mr. Devey's success being due to the fact that his buildings were modelled in wood, but it must be remembered that he was very fortunate in his clients, and never at a loss for any money to be expended. A great many of their clients, on the contrary, would look askance if asked to pay for models of buildings they were having designed. Mr. Sparkes had made a remark about the City and Guilds of London Technical Institute, and the members of the Architectural Association felt strongly that they also owed a debt of gratitude for the way in which one of the rooms of that body had been placed at the disposal of the Class of Masonry. He believed he was not saying anything which was not known when he added that the same Institute was considering how in various other ways architectural education in London could be fostered and helped.

The vote of thanks was then put, and was very cordially received.

Mr. Sparkes, in replying, said his meaning was not that the architect ought to make full models, so to speak, of his buildings. That, he took it, belonged to another work; nor did he think that the architect, with all the things he had to learn pressing on his time, would arrive at a great pitch of success as an original modeller. What he meant was that by the practice of modelling that higher sense should be stimulated which one perceived was moving the greater architects. He could not express that by any other means than that of colour. He well remembered his first impression on seeing the façade of the Cancellaria at Rome; it was a new vision, for the old well-known parts had been so arranged that they produced quite a new effect. One might take the archæological view of ornament, and demonstrate what the Egyptians, Greeks, Romans, and every other nation had used, but that was not quite the thing he wanted to bring out. After all, the use of the several parts was a matter of detail, but the effect they produced was what he should like young architects to study. To demonstrate the use of a modelled elevation, Mr. Sparkes referred to Mr. Herkomer's new house at Bushey, which, he said, was one of amateur plan, and a building for which an American architect had given an elevation. The plan was extraordinary, but one of his (the speaker's) students made a model of it; it was a very difficult thing to realise without a model, as the house was one which would make an architect's hair stand on end. At the same time, it was an artistic building, with an enormous amount of light and shade about it. Mr. Herkomer was really erecting his house from the inside outwards,—building first the furniture, and then a shell which eventually would be encased in the external apartments. With this in view a number of wood-carving machines were employed, driven by a gas engine, and these machines, working a number of drills, were used by workmen in sinking the ground of the ornament, leaving the pattern a mere silhouette, which was then carved. That was, no doubt, a saving of labour, but it took away the character of a hand-worked ground. On the same principle he also objected to Mr. Harvey's advocacy of glueing layers of wood together, and then carving panels out of such layers so as to secure uniformity of background. Why, the very irregularity of the ground in hand-work gave life, which a merely mechanical treatment took away. He had been asked to say how many architects he had had in his modelling classes. He did not know that he had any, and possibly that was the reason why he was addressing the Architectural Association (a laugh). The union of stone-carving and modelling had been a great success. The stone-carver had a very limited outlook before him, and it was not likely he would trouble himself much about colour or the refinements of art, so he fell into the condition of unintelligent drudgery which was so common in this age of divided labour. But they had taken those men, and put before them a totally different ideal, by making them model from the finest forms. Such men, after a thorough technical knowledge of the treatment of stones of various textures, made most excellent designs. Mr. Harvey's remarks about M. Guillaume were to the point. The greatest sculptors worked for colour, and the balance of colour, and what was now done by the sculptor might be done by the skilful architect in his buildings if he knew the enormous capabilities of the materials in proper distribution.

The Sanitary Registration Bill.—At the ordinary meeting of the Council of the Sanitary Assurance Association, 5, Argyll-place, Regent-street, on Monday last, Sir Joseph Fayrer, K.C.S.I., F.R.S., in the chair, the following resolution was unanimously passed, on the motion of Mr. H. Rutherfurd, seconded by Mr. Andrew Stirling:—"That the principle of the Sanitary Registration of Buildings Bill,—viz., that the law should forbid any building being used for public or semi-public purposes, unless and until the arrangements for the water-supply, drainage, and ventilation of such building shall have been certified as satisfactory by some qualified person,—having been very widely approved, a determined effort ought to be made to pass the Bill into law during next session, and in order to facilitate its progress in Parliament it will be desirable to introduce the measure in the House of Lords."



Pavement of North-East Room.

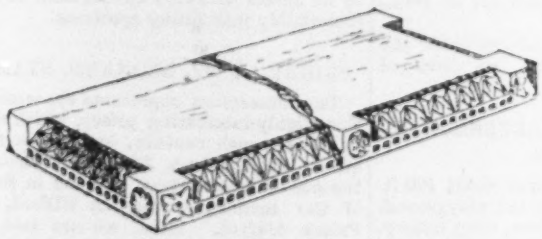
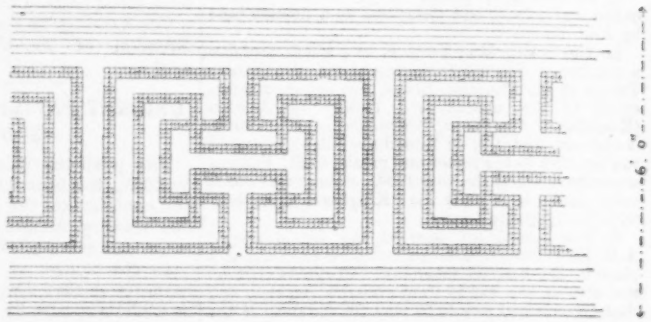
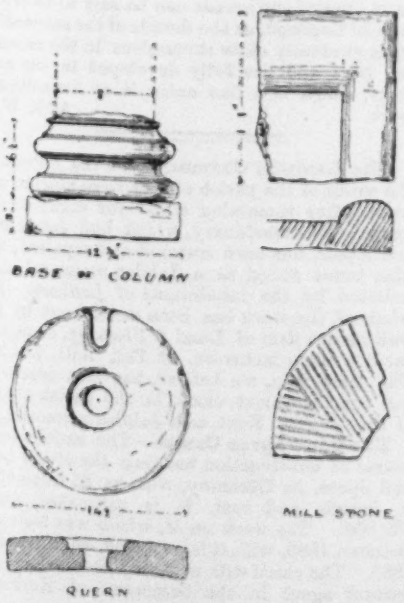


Table Stone.



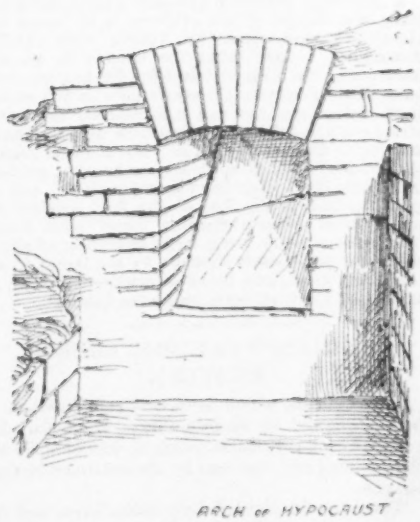
Mosaic Border from North-West Room.



ROMAN REMAINS, TOCKINGTON, BRISTOL.

We give a few sketches taken from the remains of the Roman villa at Tockington Farm, near Bristol, for which we have not been able to find space hitherto. In the *Builder* for Oct. 22 last, our first article was devoted to a detailed description of the villa.

The illustrations here given include, as will be seen, the entire design of the pavement of one room, a mosaic border from another room, the arch of the hypocaust, and a few miscellaneous remains, illustrating a class of relics frequently found on the site of similar remains. The arch of the hypocaust is formed of the local lias stone, which splits readily into the apparently evenly-cut forms indicated.



Illustrations.

DESIGNS BY THE LATE W. BURGES.

THE designs for a pastoral staff, and for decanters, by the late W. Burges, are reproduced from the portfolio of photographs of his work brought out by Mr. Pullan, some remarks on which will be found in another column.

RESTORATION OF ALL SAINTS CHURCH, ASHDON, ESSEX.

THE proposed work in connexion with the above consists not only of the rebuilding of walls, buttresses, windows, &c., as shown by hatched lines upon the plan given with our illustrations, but also of removing the lead from the roofs, thoroughly repairing and renewing the same, and re-covering the nave and chancel with tiles and the aisles with lead; taking up the present floors and removing the galleries, seating, &c., and laying wood-block flooring on concrete; removing old plaster; repairing the flint-work externally, and plaster internally, and also the stonework to windows, doors, &c., which is, unfortunately, of local "clunch," or chalk; removing the earth outside to below the floor-level, and forming a gutter round the building; a new oak pulpit; reseating in oak, with oak screens to form vestries and to the tower archway, &c.

Want of funds has prevented the promoters doing more than a small portion of this work. An oak pulpit, executed from the designs of the architect, Mr. John W. Alexander, of Middlesbrough, by Messrs. Rattee & Kett, of Cambridge, has been placed in the church in memory of the late rector, and the reflooring and reseating of the church has been partially carried out by Messrs. W. Bell & Sons, of Saffron Walden.

The fabric is of historic interest, as it is considered to be upon the site of a minster erected A.D. 1016 to commemorate the battle fought upon or near its site, between Edmund Ironsides and Cnut.

The Rector, the Rev. H. B. Swete, D.D., writes thus to the architect:—

"I have not had time to work out the history of our church and parish, my own studies lying another way. But I will put down what I have collected.

1. In Domesday (Essex D., p. cxli) the place is called Ascenduna, and described as a domain held by Ralf Baignard.

2. The Cotton MS., Vesp. F. xv., which contains a number of documents connected with the Cluniac Priory of St. Pancras, Lewes, has repeated references to the church and rectory of Ashdon (Essenduna, Assendena, Asshendon). From these it appears that 'G. de Essenduna Miles' presented the benefice to the rector and monks of St. Pancras somewhere about the year 1200. Subsequent deeds seem clearly to identify the 'Knights of Essendun' with the Baignard family.

3. The chroniclers describe the battle fought A.D. 1016 between Edmund Ironsides and Cnut at a place in Essex called Assandun. They add that on the site of the battle Cnut raised a minster, and that he endowed priests to sing for the souls of the slain. This minster was dedicated in 1020 by Archbishop Walston of York, in the presence of Cnut and a great company of earls and bishops. But within a century it had given place to a small church under the charge of a parish priest.

4. Although Professor Freeman asserts the contrary, the weight of the evidence is in favour of identifying Ascenduna or Ashdon with Cnut's Assandun. I have taken the trouble to go to Ashingdon, the other claimant for this honour, and have sifted Professor Freeman's note on the spot. Both ancient spellings and topographical considerations point to Ashdon. Bartlow Hills, of course, had nothing to do with the battle. But the field below the church is full of apparent earthworks; graves of Scandinavian origin have been found in it, and a great mound at the foot of the field consists of cartloads of organic remains mixed with lime, among the remains being large quantities of river shell-fish, presumably brought by the Danes from the Essex coast, and bones of oxen,—the relics, I take it, of their last feast before the battle."

ST. JOSEPH'S CATHOLIC CHURCH, SWANSEA.

THIS church, which is nearly completed, has been designed by Messrs. Pugin & Pugin. It consists of nave, aisles, chancel, two chapels at the chancel end, and one by the entrance to the church.

The nave is divided into seven bays, and is separated from the aisles by an arcading supporting the clearstory, which is pierced by three-light windows with traceried heads in each bay. The west end is lighted by a four-light window with richly-traceried head. At the west end are two entrance-doors with traceried tympanums. There is a gallery supported by stone arches, and approached by a turret staircase, which forms one of the buttresses of the tower. The chapel at the west end is approached from the vestibule under the gallery. The baptistery is also approached from the vestibule, and is in the lower stage of the tower.

The tower and spire, which is not yet built, will rise to a height of 165 ft.

The aisles are lighted by triplet windows, with cusped heads in each bay. The respond of the nave arcading at the east end has been made sufficiently wide to admit of a small arch through which the priest can pass to enable him to administer the Holy Communion, the Communion-rail extending the whole width of the church.

The chancel is divided from the nave by a stone arch, 45 ft. in height. The mouldings of the arch die on a cap and shaft, supported by a canopied niche on each side, in which are placed figures of Our Lady and St. Joseph. The haunches of the arch are weighted by pinnacles, which rise to a height of 16 ft.

The roof of the nave is constructed with cross-braced principals supported on caps and shafts, the bases of which are corbelled out; in each principal is a curved rib; the roof itself is boarded, and divided into panels by moulded ribs.

The chancel is apsidal in form, having angle buttresses. It is lighted at the east end by a three-light window with traceried head. Over this window is a gable corbelled out and surmounted by a stone cross. The other bays of the chancel are lighted by two-light windows with traceried and cusped heads. The roof is similar in design to that of the nave, but richer in detail. The walls between the side chapels and the chancel are pierced with arches. There are rose-windows in the side chapels.

The total length of the church is 142 ft. inside, the width 56 ft., and the height 62 ft.

The sacristy, which adjoins the presbytery, is connected to the church by a cloister. The materials used are local stone for facing, with dressings of Bath stone, the latter being used throughout for the interior work, with the exception of the columns to the nave arcading, which are octagonal in form, and are of Dumfries stone built in courses.

The building is being carried out under the direction of Mr. Cruikshank, the clerk of works.

CRICKET PAVILION, CHARTERHOUSE, GODALMING.

THE pavilion, which measures about 100 ft. by 20 ft., has been erected on the playground, and contains, on the ground-floor, shop, bakery, and brewery, dressing and club-rooms, umpire's room, and roller-shed.

In the centre, on the first floor, is a large room for cricket dinners and the use of visitors at athletic sports, &c. A platform with stepped seats is placed in the middle.

The building is of framed timber, Burnetised, and filled with concrete of selenitic lime, and fastened to dwarf walls of selenitic concrete. The tiles are laid in concrete in the manner introduced by the architect, Mr. Ralph Nevill, F.S.A. Messrs. Tompsett & Kingham, of Farnham, were the builders.

The drawing was in the Royal Academy exhibition of this year.

BINDON, DEVONSHIRE.

BINDON, near Axmouth, in Devonshire, must not be confused with Bindon in Dorsetshire. The Dorsetshire Bindon, which is near Wool, is celebrated for the ruins of its Cistercian abbey. The Devonshire Bindon consists of an old farmhouse, or grange, of which we give illustrations. It is very interesting as an example of one of the smaller manor-houses of the Middle Ages. The building itself is erected in the shape of the letter L, the perpendicular having two roofs, with a valley between, and the horizontal a gabled roof and a "lean-to." There is a forecourt, enclosed by stone walls, and entered by a semicircular arched gateway just at the angle of the two lines of the L, and facing into this court is the principal entrance of the house, consisting of a gabled porch, which appears to have been a subsequent addition, probably of Elizabeth's time. Entering by the porch, to the left is the hall, now used as a kitchen, and very much modernised. It is, however, separated from the entrance-passage by a very pretty Early Perpendicular screen, similar in design to that of the chapel, shown in our illustration. Turning to the right, one enters the principal parlour, which, unfortunately, has been papered, but still retains its old carved stone chimney-piece, and is lighted by two three-light Perpendicular windows, which are shown externally in our view from the garden. The staircase has been altered at the same time that the porch was built, but the principal landing is in its old condition, and is extremely interesting. It has a finely-moulded ceiling, and a screen separating it from a very curious little domestic chapel; the great peculiarity is that this screen, instead of running north and south, runs east and west, and has a doorway with a finely-panelled oak door close to its western end. The screen was formerly open, but has been boarded up internally, and the chapel is now converted into a bedroom; it receives light from a large three-light Perpendicular window (now partly blocked up) on the south side. The exterior of this window is shown in our view from the garden, and the interior of it in our sketch of the landing and chapel. A very rich and beautiful niche, with the remains of a piscina under it, is to be seen in the easternmost jamb of the window. The exact date of this chapel can be fortunately ascertained, as there exists at Exeter a licence granted by Bishop Lacy to Roger Wyke in 1425, permitting him to have Mass said in this chapel. Several of the rooms, and especially the offices in the south wing, are in their original condition. They are plain almost to rudeness, but very picturesque. We were told that about thirty years ago there existed a kind of tower or heavy stone building attached to this house, which went by the name of the jail, which was pulled down; and it is not improbable that this may have been the remains of a still earlier house, especially as some proportion of the walling and a little square-headed trefoil window near the porch also look like portions of some earlier structure. Bindon is, or was, at any rate, a short time back, for sale, and it is much to be desired that it may fall into the hands of some one who will see to its preservation, as fifteenth-century manor-houses containing chapels are by no means common in England, and it is a remarkably interesting specimen.

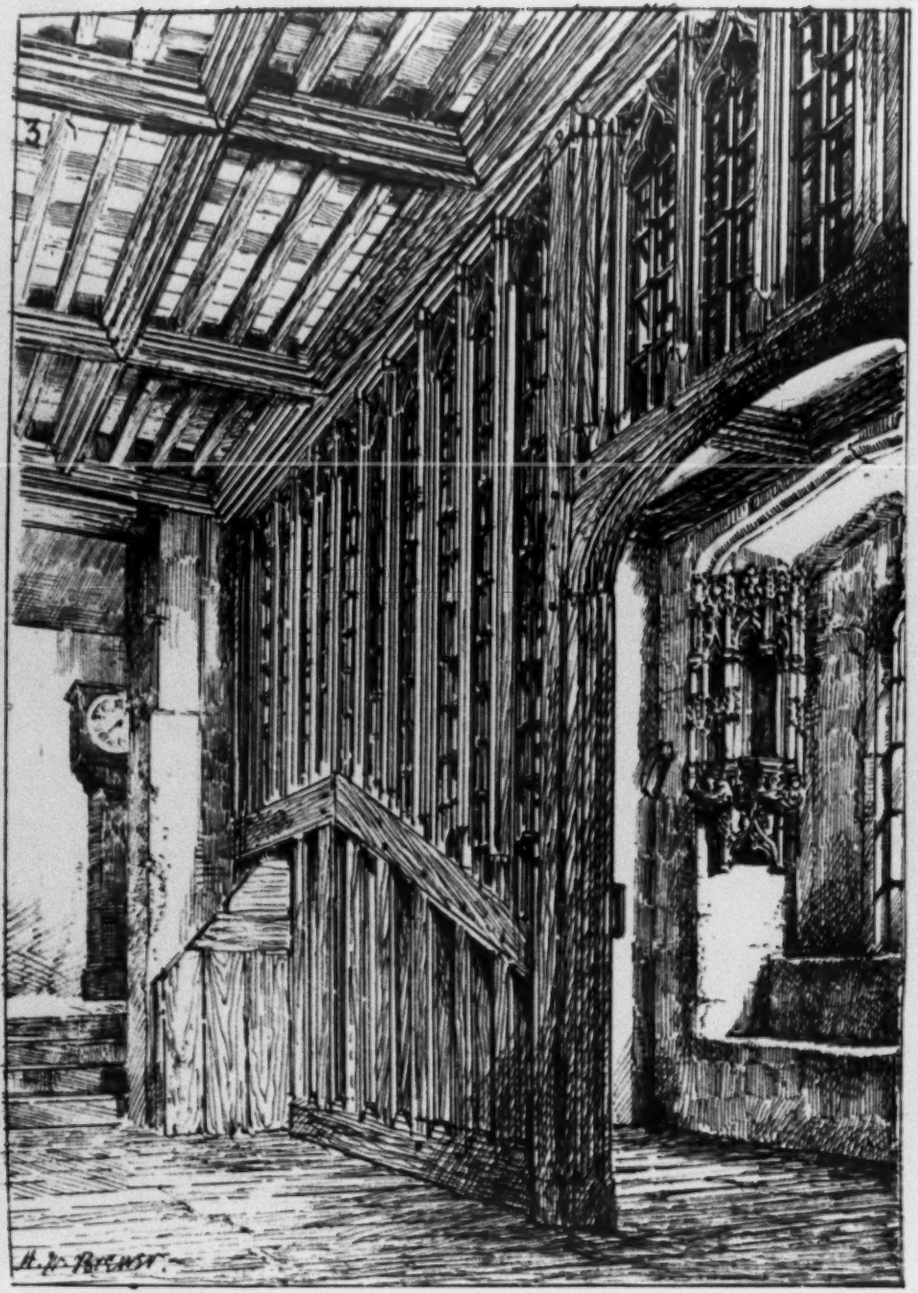
PRIORY OF ST. LEONARD, STAMFORD.

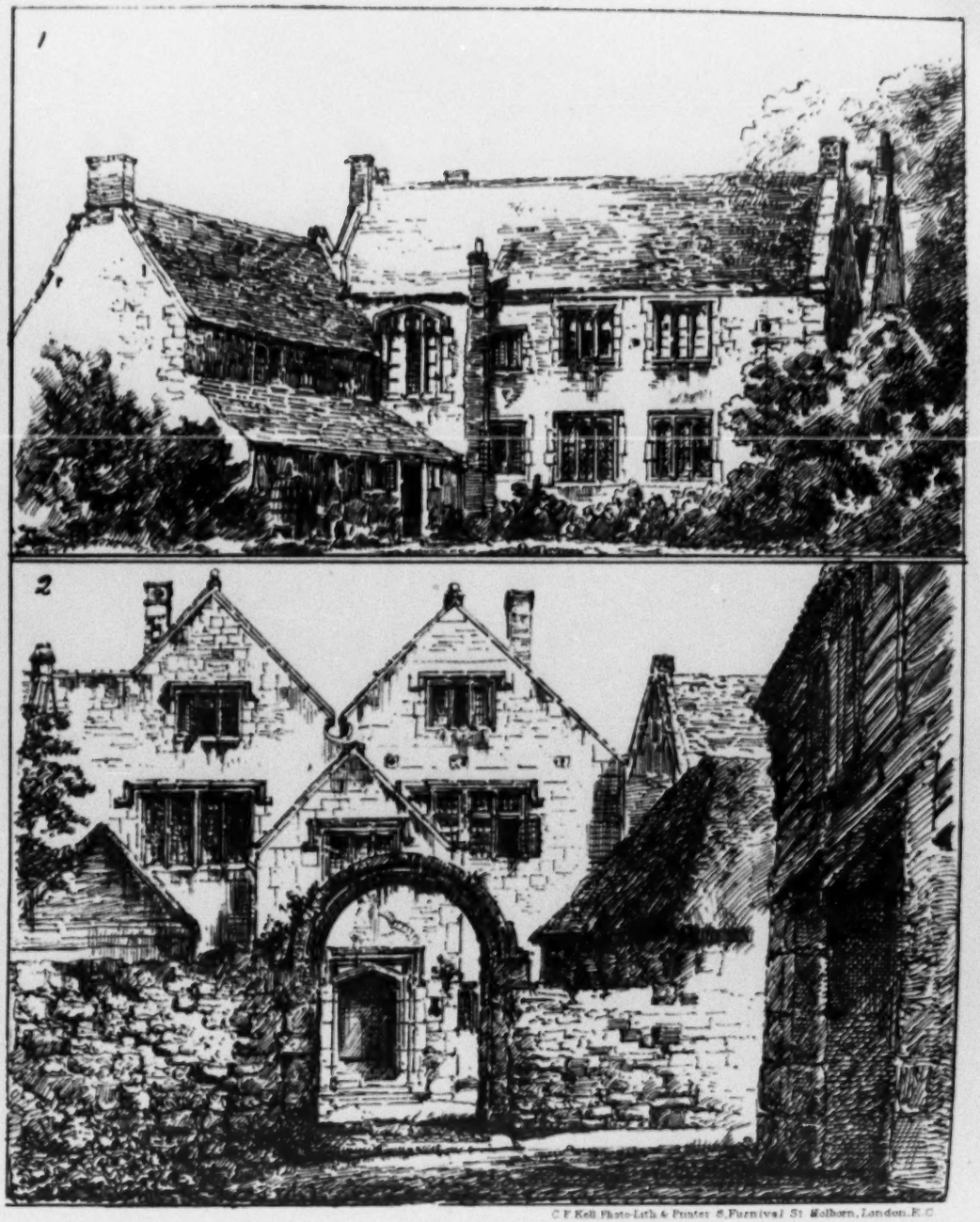
THE illustration represents the west front of this highly-interesting priory, which was built in the eleventh century, by William the Conqueror and Carileph, Bishop of Durham, upon the site of a monastery founded in the middle of the seventh century by Wilfred, tutor of Prince Alkfrid. Here, we are told, lie the remains of Henry of Stamford, prior of Finchale, who was buried in 1320, and "after his interment a light like a sunbeam was seen shining upon his grave." The building, as now seen, was carefully restored by the late Marquis of Exeter, and consists of the west end of the nave, with five bays of the north arcade, and part of the clearstory. Only the two easternmost bays of the arcade can be said to be of the time of Carileph, as the details of the succeeding style gradually show themselves in the remaining bays, and are fully developed in the west front, which is a fine example of Transitional work.

A. D. W.

The Lenham Chimes.—The old chimes in the tower of the parish church were started last week, after remaining silent for eight or ten years. The machinery, which had fallen into bad repair, has been restored and repaired, and nine tunes added as a Jubilee memorial, contributed by the inhabitants of Lenham. The whole of the work has been carried out by the well-known firm of Lund & Blockley, clock and carillon manufacturers, of Pall Mall, London. The same firm, we believe, has just erected a full quarter turret clock in the parish church of Birchington, Kent, as a Jubilee memorial.

The Oder-Spree Canal.—The canal now in course of construction between the rivers Oder and Spree, in Germany, will be 85 kilomètres in length, and cost, it is estimated, about 630,000*l*. The work on it, which was begun in October, 1886, will, it is expected, be finished in 1889. The canal will probably become an important agent in the commerce of Northern Germany.

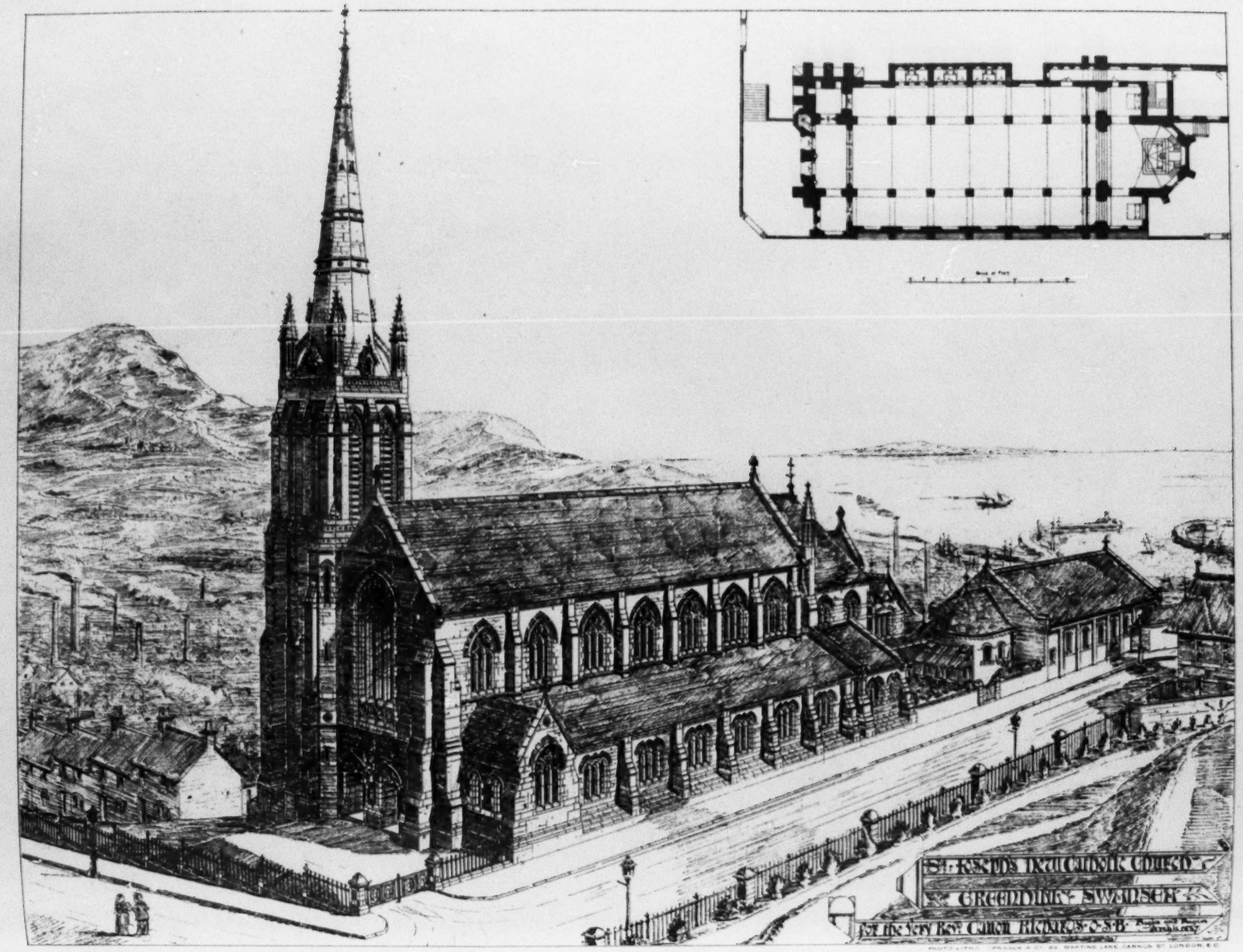


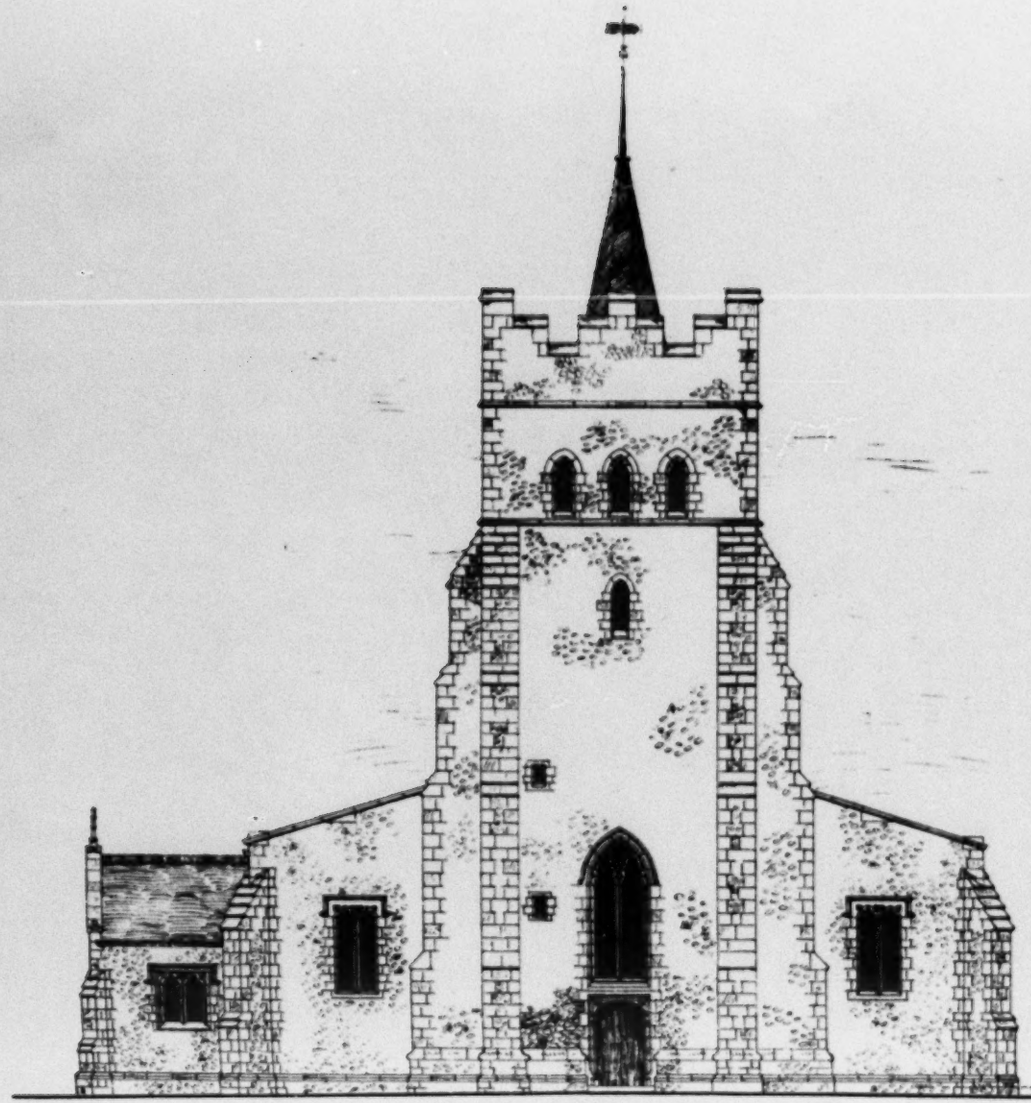


C.F. Kell, Photo-Lith. & Printer, 8, Furnival St. Holborn, London, E.C.

BINDON—AXMOUTH.

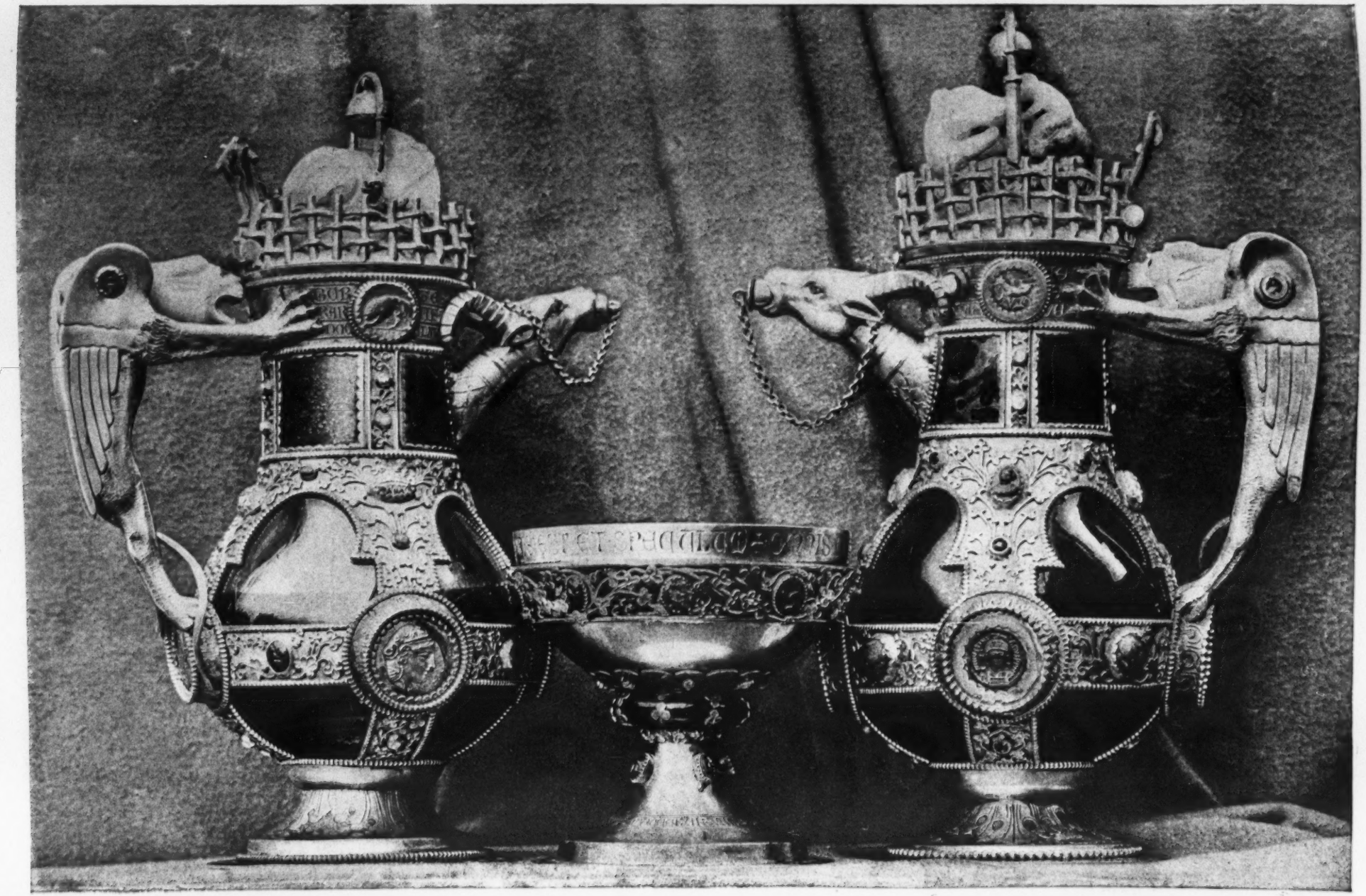
1. Chapel and Parlour from the Garden. 2. House from Entrance Court. 3. Interior of Chapel.


ST. JOHN'S INCUMBENT CHURCH
ST. GREEDDINGS SWANSEA
FOR THE VERY REV. CANON RICHARDS D.D. V.G.

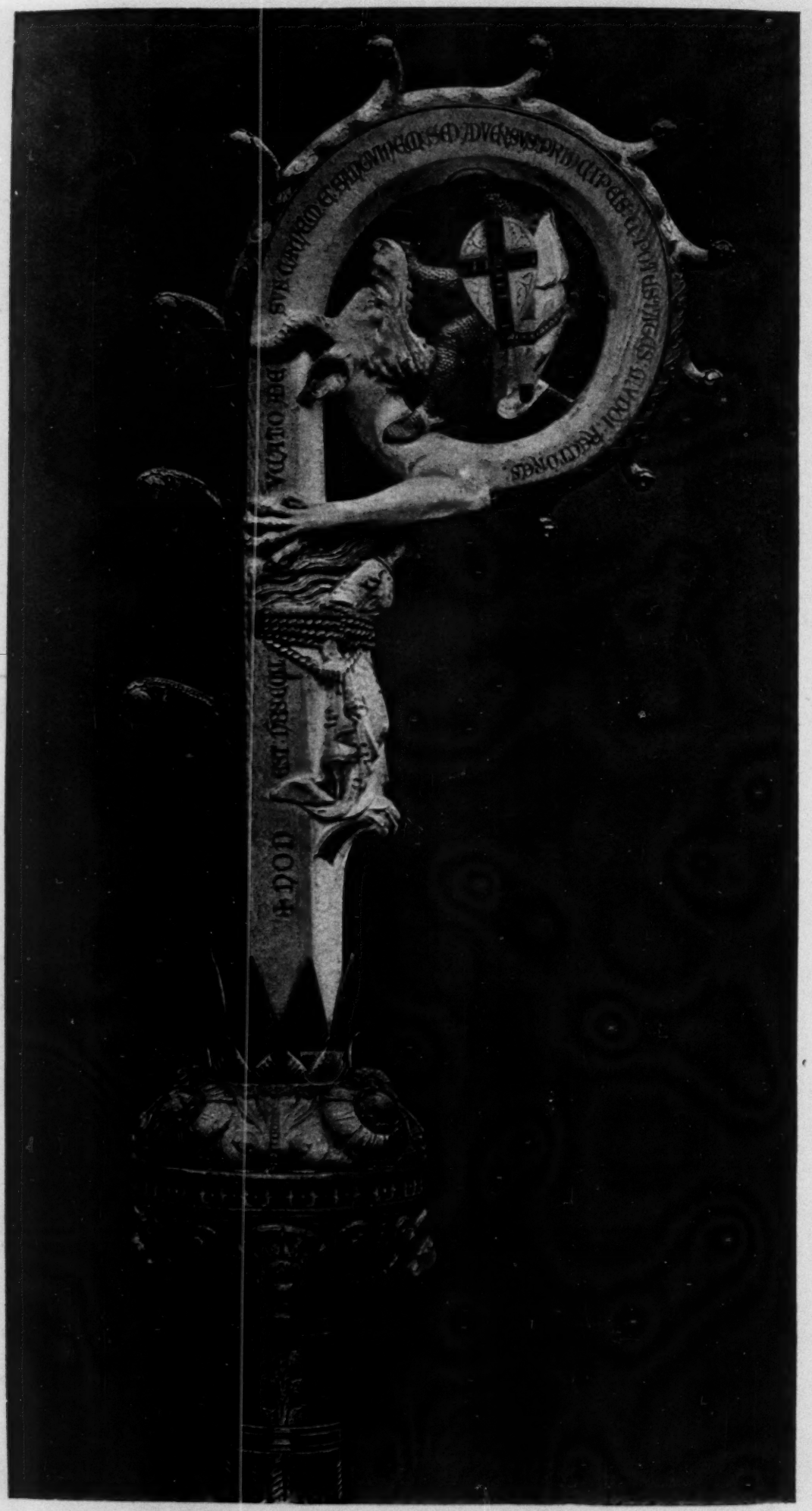


WEST ELEVATION

EAST ELEVATION



DECANTERS AND DRINKING CUP. Designed by the late W. BURGES

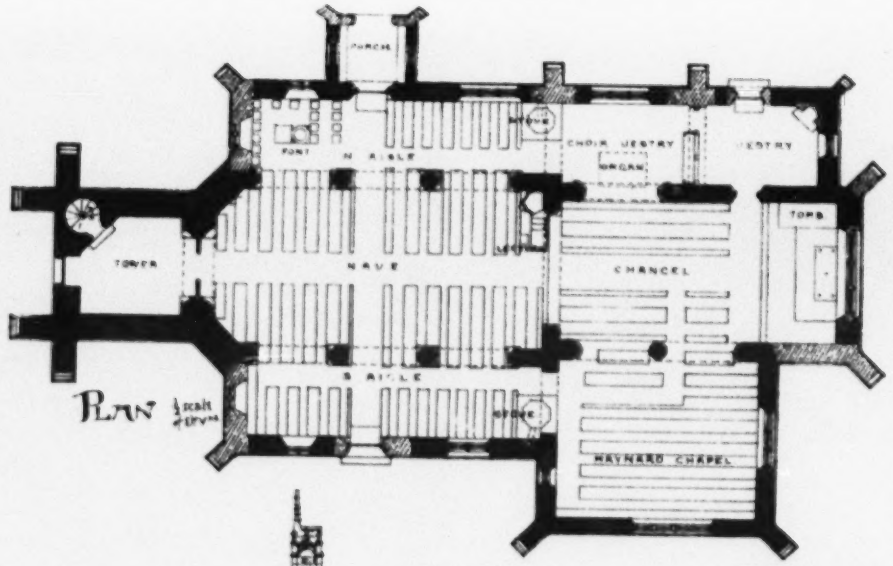


PASTORAL STAFF. DESIGNED BY THE LATE W. BURGES.

ALL SAINTS CHURCH
ASHDON ESSEX

Proposed Restorations shewn by hatched lines on PLAN.

Mr John W Alexander ARIBA
Architect



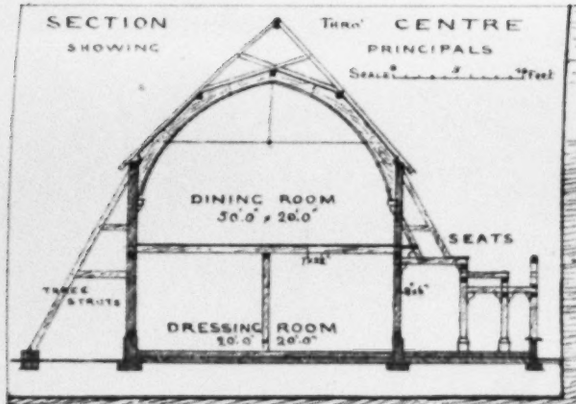
PLAN

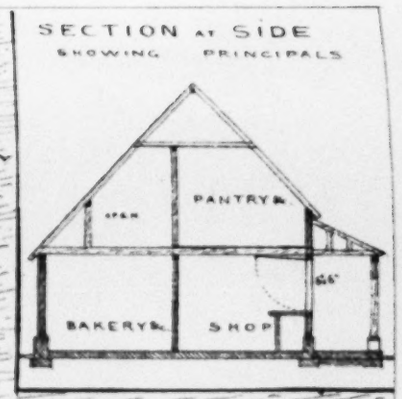
NORTH ELEVATION

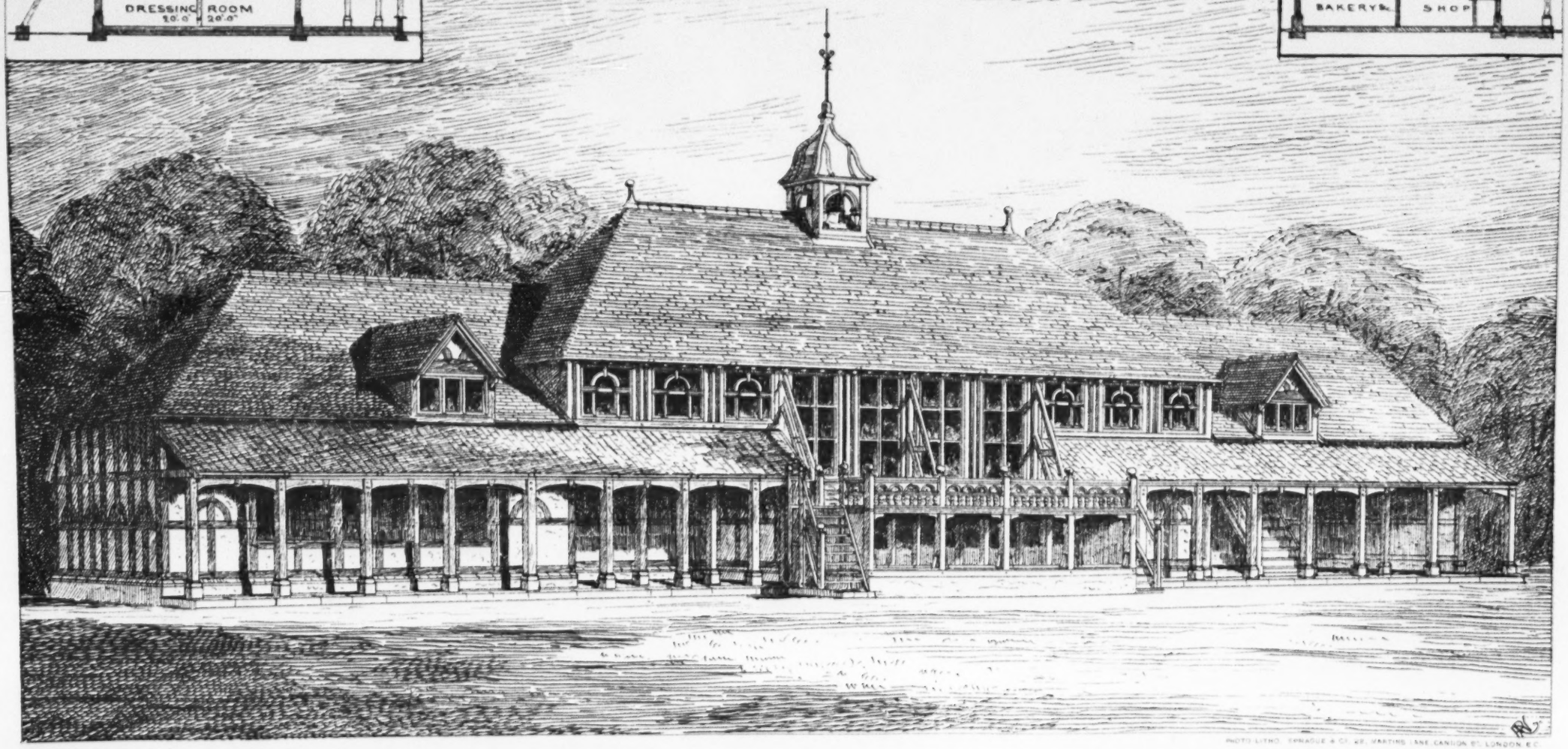
0 5 0 10 20 40 feet

C. E. Kell Photo Lith & Printer

8 Castle St Holborn London E C



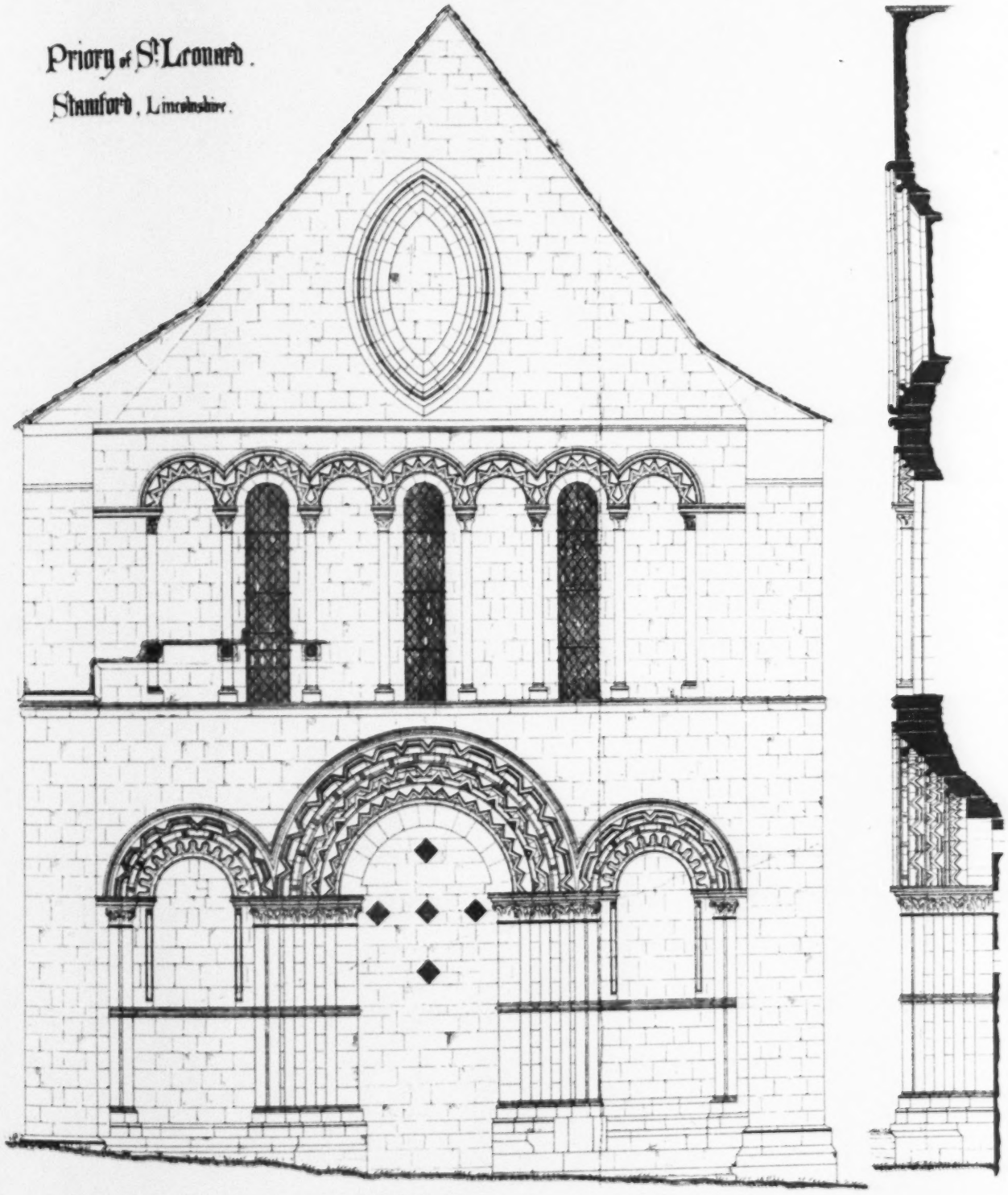




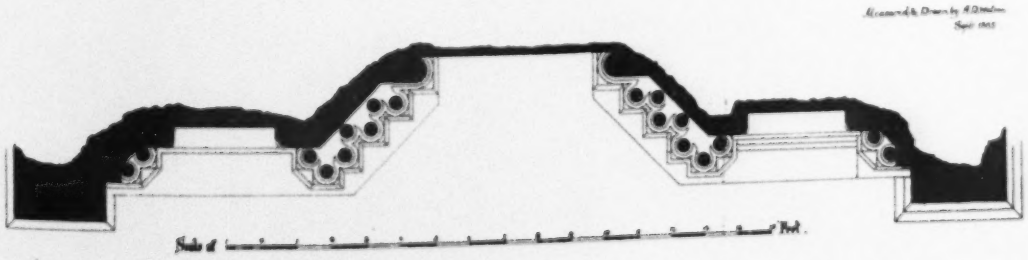
CHARTERHOUSE CRICKET PAVILION, GODALMING.—Mr. R. Nevill, F.R.I.B.A., Architect.

Priory of St Leonard.

Stamford, Lincolnshire.



West Elevation.



Scale of Feet.

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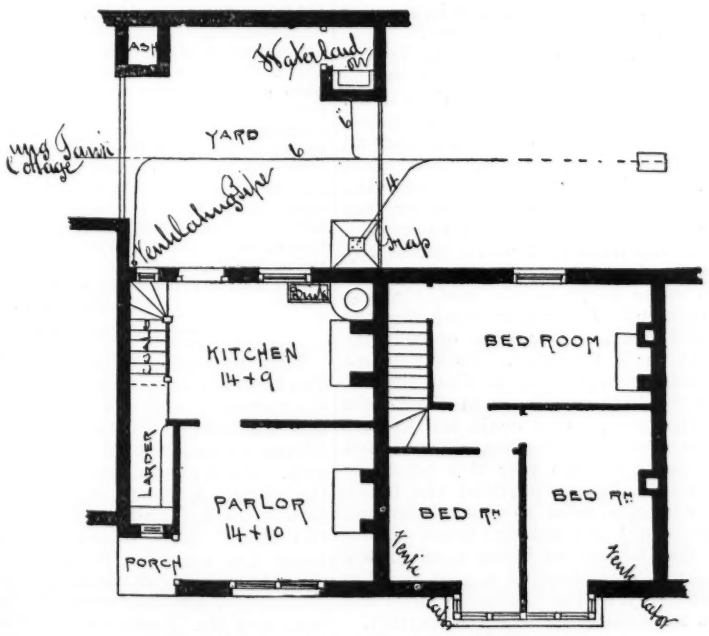
New Cottages, Red Lion Row, Windsor.



Plan of Cottages, Red Lion Row, Windsor.

IMPROVEMENTS AT WINDSOR.

We publish an illustration of some new cottages for the poorer class of inhabitants, which have recently been erected in the Bier-lane district of Windsor. They have been built by Mr. Richardson-Gardner, M.P., on the old site of Red Lion-row, from the design of Mr. Stephen Wyborn, architect, Windsor. From a sanitary and structural point of view these cottages are said to be satisfactory; and they are, moreover, let at a rental which brings them well within the reach of all. The *Builder* so long ago as 1871 condemned the Bier-lane district of Windsor; since which the whole of the old courts and alleys which disfigure and demoralise the Royal borough have been pronounced by the Inspectors of the Local Government Board in their report of last January to be "still pitiably bad." The Rev. Arthur Robins, the Rector of the parish in which Bier-lane and many of the worst quarters of Windsor are situated, has long struggled, unsupported by those in Windsor who should have been the first to give him their moral and material support, to get human homes for the Windsor poor and to aid him in continuing the work of rescue originated in the town by the late Prince Consort. He has, however, never ceased until at last the reconstruction of the homes of the Windsor poor has begun; and, though the buildings are not of architectural interest in one sense, we are glad to publish an illustration of them as a memorial of the commencement of an improvement long called for, and to which we have given whatever support was in our power.

SEWER VENTILATION.

At a recent meeting of the Wimbledon Local Board the following important report on sewer ventilation was presented to them by their Engineer, Mr. W. Santo Crimp, Assoc.-Mem. Inst. C.E., a memorial having been presented to the Board on the subject:—

"The persons signing the memorial reside in all parts of the district, south of the railway; the complaints are, therefore, of a general rather than of a particular nature.

By far the larger proportion of the sewers in the entire district fulfil the conditions of perfect sewers, *i.e.*, they have gradients sufficiently steep to render them self-cleansing, are thoroughly ventilated, and are frequently flushed. As it is proved by the memorialists that the emission of foul smells is of constant and general occurrence, the obvious conclusion is that the system of ventilation at the street level is an obnoxious one. In my opinion some other method should be adopted.

In experimenting on the Thornton Hill sewer, during the past summer, some unexpected and striking results were obtained. The sewer was trapped off the Worple-road outfall into which it discharges, and the syphon was provided with an air-pipe brought to the surface; the termination of the sewer, near the Ridgway, was furnished with a 6-in. pipe, to which a powerful fan was attached. All the known openings were closed, with the exception of the air-pipe at the foot of the hill, out of which the sewer air poured in a continuous stream. The fan was worked for some time and extracted large volumes of air, but all the time the air poured out at the foot of the hill in undiminished quantity. On trying the openings nearer the fan the air poured out of these as soon as the covers were removed, and at the nearest manhole to the fan, distant about 400 ft., the air was not affected. The experiments prove how uncontrollable the gases are, and how useless shafts with furnaces would be. All through the summer the gases poured down the hills into the Worple-road outfall; in cold weather the gases travel up the hills: thus the difficulties of ventilation are increased.

It cannot be shown that the excessive ventilation of sewers,—which are too small for men to work in,—is necessary or of the smallest advantage if the gases can be disposed of elsewhere than at the street level; all that is required is that sufficient vent should be provided to render the admission of sewer air into our dwellings impossible. If houses are themselves properly drained, this is accomplished, even where sewers are unventilated, since if the gases were forced through the disconnecting trap, they would pass up the vent-pipe of the house-drain. If vent-pipes be provided for each of the sewers, and if these pipes are placed in carefully-selected positions, the necessity for the street openings would cease, and they might be closed. I suggest that this course be adopted; it is the best method of dealing with the question, in my opinion. Ventilating lamp-posts are, as a rule, the cheapest, and may be used in a great many cases; in others, pipes should be carried up trees and houses. All the sewers in the district can be treated

in the manner suggested at a cost of about 500*l*. As I have successfully dealt with upwards of fifty offensively-smelling manholes during the past five years, by the means suggested, success may be said to be assured."

NEW BOARD SCHOOLS IN LONDON.

THE deposit of plans customary at the closing of the year is already made by the School Board for London. At their offices on the Victoria Embankment may be seen those which relate to the next forthcoming school supply for the metropolis. Neglecting, for the present, two alternative sites, we find that the Board's plans concern thirty-two sites either for new or the enlargement of existing schools, being for thirteen on the northern side and nineteen on the southern side of the Thames. The southern district includes the two large divisions of East Lambeth and West Lambeth. In West Lambeth ten new sites are scheduled, their area extending over an estimate of 215,195 ft. superficial. Other sites are distributed throughout certain divisions, as follows:—East Lambeth Division: St. Mary, Newington, and St. Giles, Camberwell, parishes, three. Southwark Division: St. George-the-Martyr, St. Saviour, and Christchurch parishes, three. Greenwich Division: St. Giles, Camberwell, and Plumstead parishes, three. The West Lambeth sites lie in the parishes of Wandsworth, Tooting, Clapham, St. Mary Lambeth, St. George-the-Martyr, and Battersea. Chelsea Division: Fulham and Chelsea parishes, three; and Hammersmith, one, at Ellerslie-road, by Old Oak Farm, being about 72,780 square feet. Tower Hamlets Division: St. George-in-the-East and Mile End Old Town parishes, two. Hackney Division: Shoreditch, Hackney and Tottenham, and St. Matthew Bethnal Green, parishes, three. Finsbury Division: St. Mary Islington, and St. Luke's parishes, four. These areas, some of them being vacant spaces, make a grand total of nearly 755,000 feet superficial, or, say, 12¼ acres, with a possible addition of rather more than 18,000 ft. having regard to the two alternative sites at Earlsfield, Wandsworth and Fulham. The figures show an increase over the estimates for last year, when a minimum of sixteen sites, equivalent to between 10 and 11 acres, were scheduled for appropriation by the Board.

INFRINGEMENT OF COPYRIGHT OF THE *BUILDER*.

COX AND ANOTHER *v.* PARDON AND OTHERS.

THIS action came on for trial before Mr. Justice Kekewich on the 11th inst. The plaintiffs, as the registered proprietors of the *Builder*, sought to restrain the defendants, Pardon & Sons, the printers, and the General Publishing Company, as publishers, of the *Brick, Tile, and Builders' Gazette*, from publishing and selling any number of that periodical containing any article, essay, note, or other matter copied or colourably altered from any article, essay, note, or other matter contained in the *Builder*.

Mr. W. Barber, Q.C., and Mr. Hadley appeared for the plaintiffs, and Mr. Henderson for the defendant Company. The defendants Pardon & Sons did not appear.

An interim injunction was, on the 16th of December, 1886, granted by Mr. Justice Stirling. It was alleged and admitted that the defendants copied *verbatim* several articles, essays, and notes from the *Builder* in infringement of the plaintiffs' copyright.

Mr. Justice Kekewich now made an order for a perpetual injunction, and ordered the defendants Pardon & Sons to pay 50*l*. damages and costs.

PICCADILLY CIRCUS.

SIR,—Would it not be well that this matter should be looked at in a broad way, without letting the existing lines of the buildings have undue influence? If a fine scheme were prepared, it could be carried out in parts,—perhaps realised in its completeness fifty years hence,—unless some public benefactors or unexpected windfall should hasten the process. Most of us are agreed that if a grand open space can be kept, it may be a success. It will, however, need to be shaped ruthlessly; the thoroughfares coming in at odd places and at varying angles would afford a splendid problem to any one, left free to settle for himself which are the essential, and which are the accidental, temporary features. The idea of a circus would probably disappear at an early stage, and most of the surrounding buildings would have new frontages before the *place* assumed a definite, monumental shape.

Are we, however, prepared to think of the matter otherwise than within very narrow limits? To leave things very much as they are,—to let the vacant bit of land against Shaftesbury Avenue to a speculator, and accept his view of the right design for a building which will pay,—to hoard round the two spaces in the centre of the *place*, and trust to something turning up to indicate a use to which they might be put,—would be following the accepted precedents;—not a very noble course, but a fairly safe one. Perhaps, however, middle courses may be worth considering still. These would, as I take it, involve the retention of the circus, and its completion in some sufficiently emphatic way. A building of less height than the existing buildings on the west side would fail to emphasise the circus form; the space would, with low buildings, be only a little less shapeless than at present. The vacant ground beyond the circumference of the circle might be liberally dealt with, not utilised to the last inch, but it would be necessary to use the larger portion of it in order to obtain a mass of building sufficiently powerful. Is the idea of continuing the street by archways under buildings,—an idea which some members of the Metropolitan Board of Works seem to have thought worth consideration,—to be put aside if the points to be aimed at are the retention and completion of the circus, and the penetration of the circumference of the new portion by the roadway? Such archways would, of course, be of very large size, both wide and lofty. A large area, lighted from above, might be arranged so as to make the middle of the space under the archways brilliantly lighted, and be a novel feature, rising from the vaults of the archways, something like a lantern tower as seen from below, serving also for the lighting of corridors, &c., in the buildings, which should be of a public or semi-public character. The great gateway to Burlington House and the entrance to Somerset House are prominent London examples of the idea, and, if treated in a becoming way, something notable in the way of architectural character might result.

This, however, is only thrown out by the way,—a catholic spirit with reference to the unshaped future being reckoned praiseworthy. The idea of a completed circus being abandoned, archways and buildings over them and all similar schemes would vanish. But what should we then aim at in the near and in the ultimate future? Is any one ready to propose that a fine architectural *place* shall be created, and to point out what that would necessarily involve, who is persuaded and persuasive enough to make other people hold strongly the same opinion? I fear very much that the business will drift, and another opportunity will be lost for a long day. Perhaps some general discussion might help to clear the air, and enable people to see things in their right relative importance. Few could fail to vote for the fine architectural *place*, at once and with both hands, if some very rich person or the National Exchequer provided the funds. Very many people seem to think, however, that too much may be attempted in one generation, and that it may be better to advance a little gently in this place, as a good deal has been done already, and as London is large and ratepayers are human. AN ARCHITECT.

"THE SIZE OF HOUSE DRAINS, AND THE USE AND MISUSE OF TRAPS."

SIR,—Mr. W. P. Buchan must be content with my reply to his strictures published in another journal, before his letter to you, p. 650 (which I have just seen), appeared. There is one misstatement in that letter, however, which perhaps I should notice. Mr. Buchan says that though thirty years ago I advocated the ventilation and flushing of sewers, it was not till ten years after that that the great truth was revealed to the world, by Mr. W. P. Buchan, that the best safeguard against the admission of foul air into houses was the use of disconnecting-traps between the house and the sewer! This is too ridiculous. There was no novelty in this idea in 1857, and in a paper which I read in 1858 to the Glasgow Architectural Society,—in the hearing of Mr. Buchan, I think,—which was published, and noticed in the *Builder* of the period, I used these words:—"It requires but a moment's reflection to perceive that the proper and common-sense course to adopt is *to prevent the foul air from getting into the house at all*. It must not, and need not, be tolerated within our doors." At the same meeting I exhibited a trap which I had designed to facilitate this complete disconnexion,—a trap which, for the purpose, has not been materially improved upon since by Mr. Buchan or any one else. I am tempted to refer to this subject chiefly because there seems to be a growing disposition among certain specialists,—and even architects, who should speak for themselves and claim as much ignorance as they please,—to discredit architects as sanitary engineers. It must be quite clear, I think, that thirty years ago I did not require to be taught by Mr. W. P. Buchan; neither can I now tolerate the idea that architects are to be instructed and dictated to by sanitary plumbers or sanitary doctors, however eminent, in one of the simplest branches of their ordinary professional work.

JOHN HONEYMAN.

SIR,—In a letter on the subject of house drainage published in your issue of November 5th, Mr. Buchan remarks that my statement, that the inlet ventilator in a system of house drainage should have twice the area of the outlet ventilator, is absurd. This may or may not be true; I, of course, think that it is not true, and one of my principal reasons for this opinion is that I find from my own experience that the ventilation arranged as I proposed in my paper on house drainage read before the Sanitary Congress at Bolton is always satisfactory, and I have never had a complaint of back-draught.

I think that Mr. Buchan proves too much: he states that with a 4-in. outlet and a 6-in. inlet ventilator the rate of admission of air was 80 ft. per minute, while with a 2¾-in. inlet the rate of admission was increased to 400 ft. per minute; thus with the same outlet of 4 in. in diameter the quantity of air in cubic feet passing through the inlet was in the first case 15·7 and in the second 16·5 per minute; but this is contrary to the nature of things, and it is not possible that with the same exertion of force the larger quantity of air should pass through the smaller opening; therefore either the conditions were not the same in the two cases, or the figures given are not mathematically correct.

If no more air be passed through the drain with the contracted opening than with the larger one, I fail to see the force of Mr. Buchan's argument, or what advantage he gains by increasing the speed of the current of air from 80 ft. to 400 ft. per minute. This increase of speed must be purely local, for if it were continued any distance the quantity of air passed through the drain would be materially decreased, owing to the increased friction; I do, on the other hand, see disadvantages which may arise from the increased speed of admission. If any corners or angles be met with while the air is passing in at this speed eddies will be set up which will have the effect of producing increased friction, and thus reducing the efficiency of the ventilation, and any such eddies must tend to produce back-draught, which is what it is desired to avoid.

REGINALD E. MIDDLETON.

Birmingham Architectural Association. The first ordinary meeting of this Association for the current session was held in the Library at Queen's College on Tuesday evening, Nov. 15th. Eleven gentlemen were nominated for membership. Mr. W. Doubleday (Vice-President) took the chair. A paper was read by Mr. J. W. Bradley, B.A. (Lond.), entitled "A Gossip about Old MSS." The lecture was illustrated by many fine examples from illuminated manuscripts. A vote of thanks, proposed by Mr. Doubleday, and supported by Mr. W. H. Bidlake and Mr. Victor Scruton (Hon. Sec.) was unanimously accorded to Mr. Bradley for his very erudite analysis of this once famous art. After a response from Mr. Bradley the meeting terminated.

Rochdale New Station.—We are informed that the directors of the Lancashire and Yorkshire Railway Company have accepted the estimate of Mr. T. W. Helliwell, Brighouse, to execute the whole of the zinc roofing and glazing on their intended new station at Rochdale. The work is to be done on Helliwell's patent systems of glazing without putty, and zinc roofing without external fastenings or solder. The total area is about 81,000 super. feet of glass and 28,800 super. feet of zinc.

New University in Washington.—The Catholic community of Washington has decided upon building a new Catholic university for that city. It is to cost about 800,000 dollars, most of which has already been collected, and the work of erection is to begin at once.

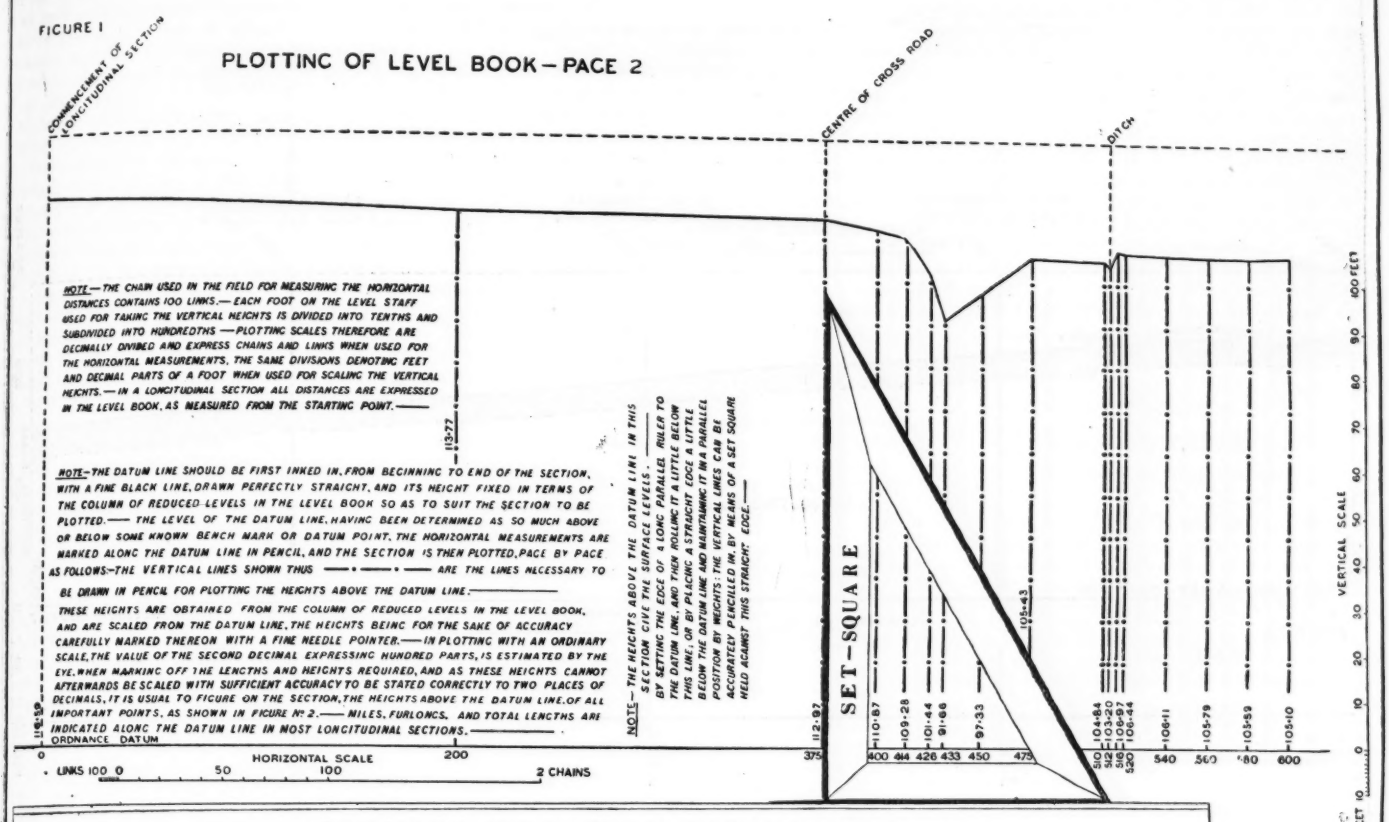
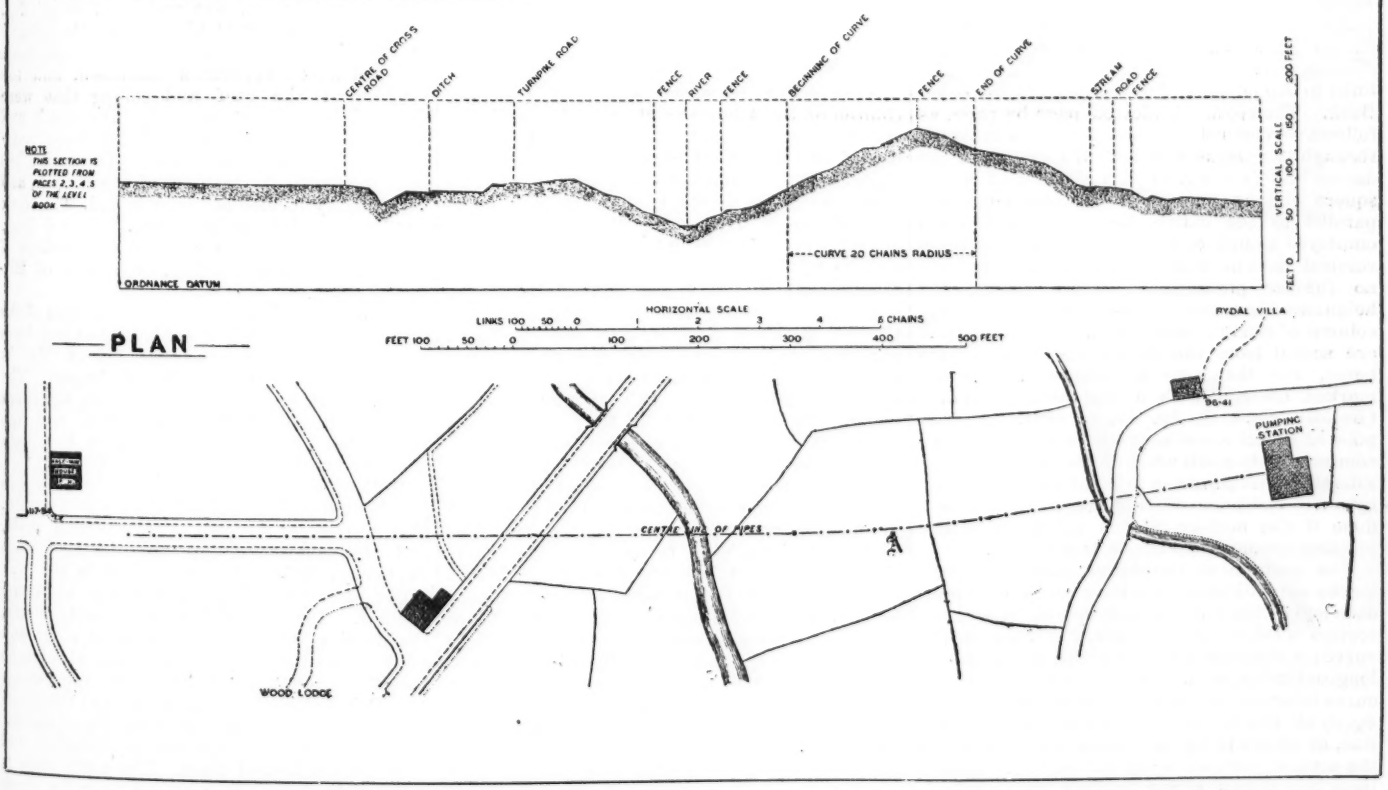


FIGURE 1
PLOTTING OF LEVEL BOOK – PAGE 2
COMMENCEMENT OF LONGITUDINAL SECTION
CENTRE OF CROSS ROAD
DITCH
NOTE – THE CHAIN USED IN THE FIELD FOR MEASURING THE HORIZONTAL DISTANCES CONTAINS 100 LINKS. – EACH FOOT ON THE LEVEL STAFF USED FOR TAKING THE VERTICAL HEIGHTS IS DIVIDED INTO TENTHS AND SUBDIVIDED INTO HUNDREDTHS. – PLOTTING SCALES THEREFORE ARE DECIMALLY DIVIDED AND EXPRESS CHAINS AND LINKS WHEN USED FOR THE HORIZONTAL MEASUREMENTS, THE SAME DIVISIONS DENOTING FEET AND DECIMAL PARTS OF A FOOT WHEN USED FOR SCALING THE VERTICAL HEIGHTS. – IN A LONGITUDINAL SECTION ALL DISTANCES ARE EXPRESSED IN THE LEVEL BOOK, AS MEASURED FROM THE STARTING POINT.
NOTE – THE DATUM LINE SHOULD BE FIRST INKED IN, FROM BEGINNING TO END OF THE SECTION, WITH A FINE BLACK LINE, DRAWN PERFECTLY STRAIGHT, AND ITS HEIGHT FIXED IN TERMS OF THE COLUMN OF REDUCED LEVELS IN THE LEVEL BOOK SO AS TO SUIT THE SECTION TO BE PLOTTED. – THE LEVEL OF THE DATUM LINE, HAVING BEEN DETERMINED AS SO MUCH ABOVE OR BELOW SOME KNOWN BENCH MARK OR DATUM POINT, THE HORIZONTAL MEASUREMENTS ARE MARKED ALONG THE DATUM LINE IN PENCIL, AND THE SECTION IS THEN PLOTTED, PACE BY PACE AS FOLLOWS: – THE VERTICAL LINES SHOWN THUS – • – • – ARE THE LINES NECESSARY TO BE DRAWN IN PENCIL FOR PLOTTING THE HEIGHTS ABOVE THE DATUM LINE: – THESE HEIGHTS ARE OBTAINED FROM THE COLUMN OF REDUCED LEVELS IN THE LEVEL BOOK, AND ARE SCALED FROM THE DATUM LINE, THE HEIGHTS BEING FOR THE SAKE OF ACCURACY CAREFULLY MARKED THEREON WITH A FINE NEEDLE POINTER. – IN PLOTTING WITH AN ORDINARY SCALE, THE VALUE OF THE SECOND DECIMAL EXPRESSING HUNDRED PARTS, IS ESTIMATED BY THE EYE. WHEN MARKING OFF THE LENGTHS AND HEIGHTS REQUIRED, AND AS THESE HEIGHTS CANNOT AFTERWARDS BE SCALED WITH SUFFICIENT ACCURACY TO BE STATED CORRECTLY TO TWO PLACES OF DECIMALS, IT IS USUAL TO FIGURE ON THE SECTION, THE HEIGHTS ABOVE THE DATUM LINE OF ALL IMPORTANT POINTS, AS SHOWN IN FIGURE No 2. – MILES, FURLONGS, AND TOTAL LENGTHS ARE INDICATED ALONG THE DATUM LINE IN MOST LONGITUDINAL SECTIONS.
NOTE – THE HEIGHTS ABOVE THE DATUM LINE IN THIS SECTION GIVE THE SURFACE LEVELS. – BY SETTING THE EDGE OF A LONG PARALLEL RULER TO THE DATUM LINE, AND THEN ROLLING IT A LITTLE BELOW THIS LINE, OR BY PLACING A STRAIGHT EDGE A LITTLE BELOW THE DATUM LINE AND MAINTAINING IT IN A PARALLEL POSITION BY WEIGHTS: THE VERTICAL LINES CAN BE ACCURATELY PENCILLED IN, BY MEANS OF A SET SQUARE HELD AGAINST THIS STRAIGHT EDGE.
SET-SQUARE
ORDNANCE DATUM
HORIZONTAL SCALE
LINKS 100 0 50 100 200
2 CHAINS
VERTICAL SCALE
FEET 10 0 10 20 30 40 50 60 70 80 90 100 FEET
STRAIGHT-EDGE OR PARALLEL RULER



The Student's Column.

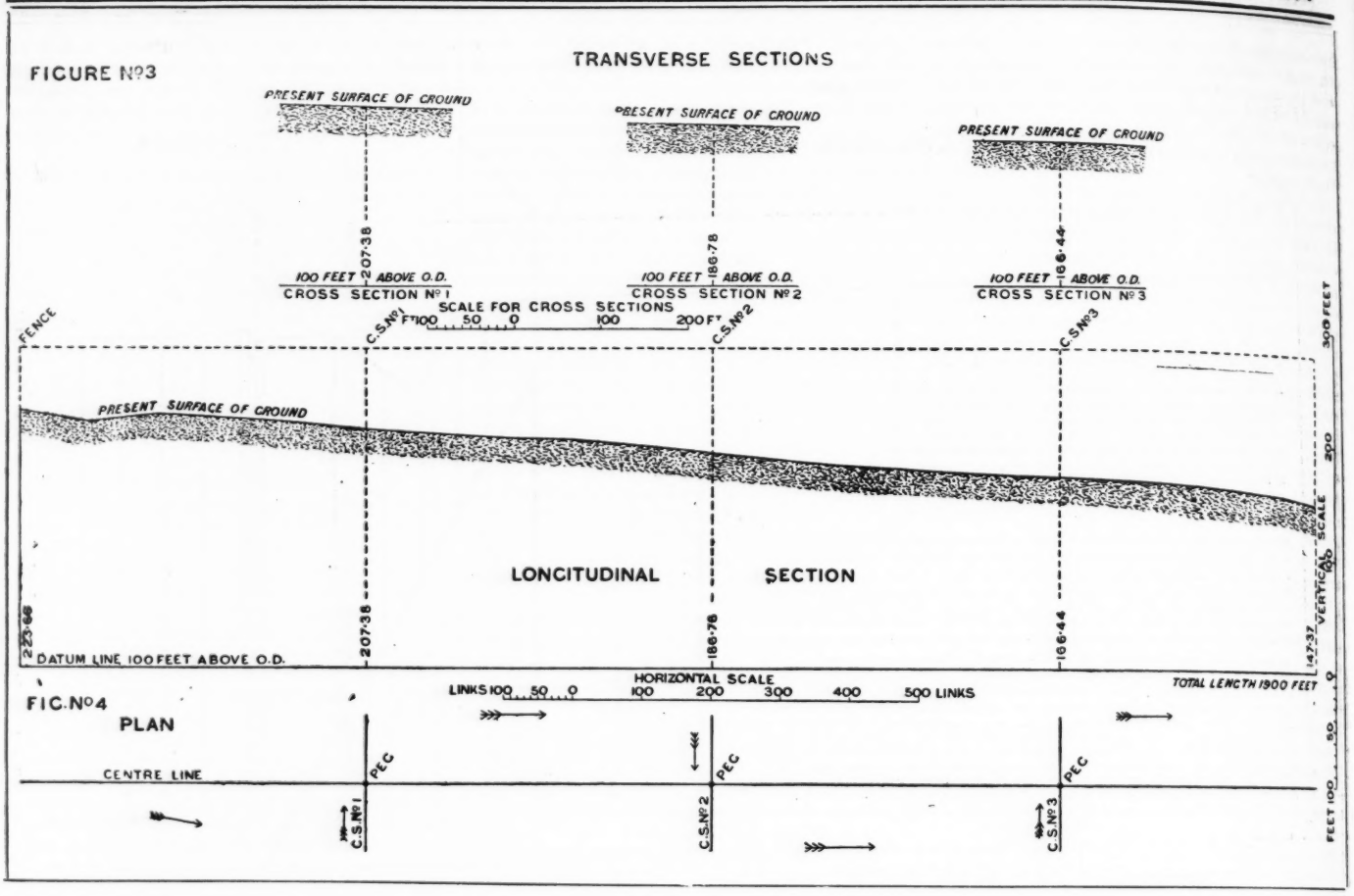
LAND SURVEYING AND LEVELLING.

XXI.—LONGITUDINAL AND TRANSVERSE SECTIONS.

AT least three assistants are required when taking a section,—two men at the chain and a man to hold the staff. The staffman calls out the number of links upon the chain at which the staff is held, and the surveyor books the total number of links in the column headed "Lengths" (*Builder*, May 14, p. 734), and describes the various positions of the staff (when necessary) under the heading "Remarks." When the ground is of an undulating nature at close intervals, intermediate sights (*Builder*, Nov. 12, p. 686) are required to be taken. These occur as shown in the form of Level Book above alluded to, between the back-sight and fore-sight at any single setting up of the level. The chain usually employed in the field for measuring the horizontal distances contains 100 links. Each foot upon the level staff used for taking the vertical heights is divided into tenths, and each tenth subdivided into hundredths, as shown by figs. 1 to 3 of the *Builder*, Nov. 5, p. 652.

In a longitudinal section (fig. 2) all distances are expressed in the Level Book as measured from the starting-point. In transverse sections (fig. 3) the distances are expressed as being so many links either upon the left hand or right hand of the centre line. Plotting scales are decimally divided (*Builder*, August 27, p. 315), and express chains and links when used for horizontal measurements, the same divisions denoting feet and decimal parts of a foot when used for scaling the vertical heights.

The datum line should be first ruled in indian ink when plotting a longitudinal section (fig. 1), care being taken that the line is perfectly straight and drawn long enough from the beginning to the end of the section to need no subsequent prolongation. Its nominal height is then to be indicated, and should be



fixed in terms of the reduced levels in the Level Book so as to suit the section to be plotted. The level of the datum line having been thus determined, as so much above or below some known bench mark or datum point outside the section, the horizontal measurements are then marked in pencil for the purposes of plotting the section, along the datum line. In the case before us these distances are to be scaled 0, 200, 375, 400, &c., links to 600 at the end of one page of the Level Book. The section is plotted page by page, as follows:—Vertical lines are first ruled in pencil through the marks at 0, 200, 375, &c., upon the datum line (see fig. 1) with the aid of a set-square sliding against a straight edge, set parallel to the datum line. The set-square employed should be long enough to draw these vertical lines of sufficient length so as to need no further prolongation when scaling the heights. These heights are obtained from the column of reduced levels in the Level Book and are scaled from the datum line, the heights being, for the sake of accuracy, carefully marked thereon with a fine needle pointer (*Builder*, Sept. 3, fig. 14, p. 348). A fine-pointed pencil is not accurate enough when the comparatively small scale of the section is considered. The points so pricked off are joined by a fine black line ruled in ink, and this is best done if the surface line is inked in before plotting another page of the Level Book.

The position of the datum points or bench marks are indicated upon the plan in fig. 2 near each end of the longitudinal section. Where the section is taken upon a curve, the radius of the curve (in this case 20 chains) is figured upon the longitudinal section. The tangent lines to this curve intersect at the peg A upon the plan (see fig. 2) off the line of the section. A horizontal line, as shown in fig. 2, is usually drawn above the section, parallel to the datum line. Dotted lines are drawn vertically from the line indicating the surface of the ground to this horizontal line at all points requiring description, and the description is generally written in at an angle of about 45° to this line, as shown. Where a peg is left in the ground upon the section at this point the vertical dotted line is carried down to the datum line, so as accurately to mark its position in a horizontal direction.

Transverse sections (as shown in fig. 3) have their position marked upon the longitudinal section as well as upon the plan. They are taken for a distance of either one or two chains as required upon each side of the centre line, and in order to continue the levelling between the bench marks, they are levelled alternately thus:—C. S. No. 1 is taken from right to left, C. S. No. 2 from left to right, C. S. No. 3 from right to left, as indicated by the arrows upon the plan. This continuous method is found in practice to be the most satisfactory way of connecting transverse sections with a longitudinal section.

CHURCH-BUILDING NEWS.

Acton.—The memorial stone of the new Church of St. Alban the Martyr, Acton Green, was laid on the 18th ult. by Mrs. Nelson on behalf of Mr. C. Montague Nelson, J.P., of Hanger Hill, Ealing, who was prevented from attending by an accident. The parish is to be formed out of All Saints, South Acton. The church will be 135 ft. 3 in. from east to west, and 53 ft. 3 in. from north to south, internal dimensions; and will seat 750 adults, giving each the space required by the Incorporated Church Building Society. It will consist of nave and chancel, with north and south aisles, vestry, and organ-chamber, with heating-vault under morning chapel, 12 ft. by 29 ft., semi-octagonal baptistery, 20 ft. by 10 ft., two porches at the west end, and an entrance at the north-east corner of the nave; there will also be a lofty clearstory on an arcading of five brick arches springing from quatrefoil columns, and the height from floor to ridge of nave will be 55 ft. The building is to be in the Early English style, and is being carried out from a design and under the personal superintendence of Mr. Edward Monson, jun., A.R.I.B.A., of Acton. The walls are to be built of bricks faced externally and internally with best red local bricks, which are of a very bright colour, and will be relieved with dressings of Bath stone and blue Staffordshire brick bands; the roofs are to be of yellow deal of the hammer-beam form, double boarded, and covered with felt and North Welsh slating, an air space being left between the two lots of boarding to secure ventilation; the flooring of the aisles is to be of solid wood blocks on concrete, the other part will be laid with floor boards and joists. The building is to be warmed with hot air, upon Messrs. Haden's principle, and ventilation is to be provided for by means of vertical shafts carried up in the thickness of the external walls under each of the side windows, covered on the top with polished brass hit-and-miss gratings as inlets, and large openings in each gable and clearstory for outlets,—all thoroughly under control. The cost of the building (including seating, lighting, and warming arrangements) is estimated at 5,000*l.*, but it is only intended at present to erect the nave, aisles, and baptistery, and to enclose the site with a substantial brick wall, and the contract for this has been taken for the sum of 3,500*l.* by Mr. Joseph Dorey, of Old Brentford.

Birmingham.—St. James's Church, Ashted, which has been closed for about two months for partial restoration, was re-opened on the 5th, by the Lord Bishop of Worcester. The interior of the church has been thoroughly repaired, the hot-water apparatus increased, and the timbers of the roof and ceiling that were decayed have been renewed. The south and east walls of the church, which were badly cracked, have been underbuilt. The organ has been moved to the east end of the church, and a baptistery formed at the west end. The work has been carried out by Messrs. Jeffrey & Sons, under the superintendence and instructions of Messrs. Osborn & Reading, architects, of Birmingham.

Coombe-in-Teignhead.—The renovation of the Church of Coombe-in-Teignhead has just been commenced under the direction of Mr. R. Medley Fulford, F.R.I.B.A., of Exeter. The general work has been entrusted to Mr. Hugh Mills, builder, of Newton Abbot, and the restoration of the old rood-screen has been entrusted to Mr. Harry Hems, of Exeter.

Dodbrooke.—Dodbrooke parish church has just been restored, and will shortly be reopened. The church is in the Perpendicular style, and the restoration has been in hand since September, 1886. A new north aisle has been added, thus providing about ninety additional sittings. The chancel has been entirely rebuilt, the flooring being of Hopton Wood stone and slate set in diamond pattern, the steps leading to the altar are formed of slabs of the same stone. The Communion-table is of oak and the choir-seats are of wainscot oak with linen-panelled fronts. The east window is traceried and filled with cathedral glass. The north aisle is divided from the chancel and nave by three new Dartmoor granite arches and three old ones. The new chancel aisle contains two stained-glass windows, and the west window of the north aisle is also filled with stained-glass. The south aisle is, with the exception of the tower, the only part of the church which has been left intact, but the removal of the ceiling has exposed an oak roof with carving and bosses. A new roof covering the nave and north aisle is of the same pattern as that of the south aisle, but the material is deal instead of oak. The pulpit is the old one, of oak, and a new lectern, also of oak, has been added. The font has been re-erected on a stone base of Dartmoor granite. The west end gallery has been taken away. The new seats are of pitch-pine, with

linen-panelled backs and fronts. All the windows not stained are filled with cathedral glass, supplied by Mr. Horsman, of Plymouth. The total cost of the restoration is about 2,000*l*. The architect was Mr. J. D. Sedding, of London, and the contractors were Messrs. S. Farr & Sons, of West Alvington.

Gullane (*N.B.*).—A new church is to be erected at Gullane, N.B., from the designs of Mr. Honeyman, of Glasgow. The old church, an interesting building of the twelfth century, has been for many years ruinous. It will not be interfered with, but its most important remaining feature, the chancel arch, will be reproduced in the new building. The chancel will have an apsidal end, and all the walls inside will be faced with the local freestone. The contractor is Mr. George Easton, North Berwick.

Lillington.—The centre portion of the reredos for Lillington Church, near Leamington, has now been placed in position. It is a representation of the "Lord's Supper" in high relief, the figures being carved out of a solid block of Caen stone, about 18 in. thick. The panel is surmounted by a battlemented cornice, with a string of Early English carving beneath. This is supported by columns of Devonshire marble of rich colouring. The structure is not yet completed, inasmuch as side wings (which are designed to rise to a much greater altitude than the centre portion) have yet to be added. The whole of the work has been entrusted to Messrs. Jones & Willis, of Birmingham.

Wainfleet (*Lincolnshire*).—There has recently been erected a new chancel and vestry to All Saints' Church, Wainfleet. It is built of bricks with stone dressings, the internal walls plastered with rough stucco. The roof is of pitch pine, having moulded principals and ribs, and covered with blue slates. The new chancel and side arches are moulded, of Bath stone. Granitic specular paving is used. The stalls are of pitch pine. The hot-water heating apparatus is by King & Co., of Hull. The work done has cost about 850*l*., and has been carried out under the superintendence of Mr. J. B. Corby, architect, of Stamford, by Mr. John Holmes, builder, of Wainfleet.

Woking. — The foundation-stone of Christ Church, Woking (Station), was laid on the 10th, by the Duchess of Albany. The church will be built of red brick and stone, with wide and lofty nave, and no aisles. When completed will seat about 800. The character of the work is thirteenth century, from the designs of Mr. W. F. Unsworth, of London. The contractors for the first section of the work are Messrs. James Harris & Son, of Woking.

Books.

The Metal Turner's Handybook: a Practical Manual for Workers at the Foot-Lathe. By Paul N. Hasluck. London: Crosby Lockwood & Co.

MR. HASLUCK is a practical man, who writes in a practical manner on a very practical subject. Still, this book is not without its faults. It consists of about 150 pages of small octavo of not very closely printed matter, and there are numerous illustrations incorporated in the text. The work is evidently intended for novices in the art of turning, otherwise it has no *raison d'être*, and it is from the novice's point of view that we shall criticise it. The author, after a few introductory sentences, commences at once with the simplest form of lathe used for metal work. On page 3 is a small illustration giving a general view of a plain lathe, and on succeeding pages are five other illustrations of similar types. It is here that we find the chief imperfection of the work. The tyro in turnery would naturally expect a description of the machine tool on which the art depends, but Mr. Hasluck gives no general explanation before proceeding to deal with the different patterns of tools made by the various makers he has selected for illustration. Thus the student is confused at first start with a number of terms of which he has no knowledge. We will suppose his natural intelligence will tell him which is the bed, gap, headstock, and to what parts some other of the simpler or more obvious terms refer; yet he can hardly be expected to know, without previous explanation, which is the "mandrel," "tail-pin," "cone-centres," "back-gear," "bridge piece," "poppet," "tail-end," &c., all of which terms are used in the few pages which comprise the first chapter.

Mr. Hasluck courageously gives the names of makers and their list quotations for the various tools he illustrates. It is a practice to be commended, for cost is generally a prime consideration with purchasers of small machine tools. To go to makers' catalogues, however, is always dangerous, and the author has fallen into the usual error of such a course. The main part of his first chapter reads like nothing so much as a paste-and-scissors compilation of trade catalogues: a source from which the illustrations also appear to have been mainly taken. These are the only faults we have to find with the book, and to some extent they are apparent throughout its course. For the rest, there is a great deal of useful information and many sound ideas set forth in the limited space the author has allotted to himself in which to treat so large a subject. There are separate chapters treating of geared lathes, screw-cutting lathes, overhead gearing, slide-rests, chucks, cutter-spindles, cutter-frames, milling and planing attachments, circular cutters, slide-rest tools and cutter-bars, tool grinding, &c.

There is yet plenty of room for a good and not costly book on the lathe, of a thoroughly elementary and explanatory nature. The work under notice, as we have intimated, can hardly come under this definition; for a pretty wide knowledge of the lathe's mechanism is presupposed by the author. Mr. Hasluck, however, appears so well qualified for the task that we hope some day he may undertake it, although, to succeed, he must make up his mind to depend less on catalogue blocks, and have special sectional and other drawings prepared, with reference letters, to illustrate the text.

The Wood Turner's Handybook: a Practical Manual for Workers at the Lathe. By Paul N. Hasluck. London: Crosby Lockwood & Co. 1887.

This is a companion book to that just noticed, and is, on the whole, a more satisfactory work. There is an absence of that catalogue element to which we have already referred, and the illustrations are generally better calculated to help the text. The author commences with illustrations and descriptions of lathes, and then goes on to treat of the important subject of the hand tools used for turning wood. In this section there are some excellent remarks on cutting angles. Rounding tools and various lathe appliances are next dealt with, and descriptions with illustrations of simple and automatic-feed rounding machines are also given; although it may be doubted whether these come strictly within the scope of a work on turning, an operation generally supposed only to be performed by means of the lathe. There is a good chapter on chucks, and another on fitting up a lathe. The latter has several good illustrations,—one, an outline drawing giving two views of a lathe, being furnished with reference letters. After this examples of work are given: "lady's companion, pin-cushion, chessmen," &c.; and then come instructions for turning billiard-balls, the *Pons asinorum* of amateur turners. The work concludes with a short chapter on copying lathes. On the whole, the book is to be recommended as fulfilling a definite purpose, and contains as much information as could be reasonably expected within its compass.

Days and Hours in a Garden. By E. V. B. 6th edition. London: Elliot Stock. 1887.

The dress of this little book is so pretty and graceful that, had it treated of the driest and most uninteresting subjects, there would have been found some few curious enough to turn its pages; but as it is, "the Garden Story" is as seductive as many of the three-volume novels that are drifting about, and when once the reader begins it he feels he must follow the footsteps of the months, and see the completion of the year's life. There are some quaint little illustrations and head-pieces, and though the language is somewhat flowery throughout, the wise may find many useful and practical suggestions for the making and keeping of a garden. The author is evidently a close observer of nature, animate and inanimate, and speaks of the flowers, and birds, and bees as if they and he were dear friends.

Each month is treated separately, and we hardly know which chapter is the pleasantest, unless it be that on the "merry month of May." We cannot agree with the author, though, when he asks if it is not time the artists should cease trying to paint the May blossoms. Why should we be denied apple blossoms in our paintings whilst we have such artists as Mrs. Allingham (and others we could name) to paint them? Neither do we sympathise with the sorrow the author seems to feel on seeing the carts laden with daffodils going up to London. There are many dwellers in our smoky city who love the country sights and scents, and to whom a bunch of shining daffodils gives real pleasure. On the whole, the "Days and Hours in a Garden" are full of pleasant thoughts and musings, and when we have gone through the course of the year and closed the book, we learn (if we knew it not before) that "to the attentive eye each moment of the year has its own beauty."

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

14,126, Chimney Tops. D. Wilkins.

The chimney-top which is the subject of this invention consists of an inner and outer case, the inner case reaching about half way up the outer case. The space left between these, forms the air-chamber for the purpose of receiving the smoke and down-draught, which is directed into the chamber by means of the conical-shaped cover over the inner case and then conveyed to the outer air through an opening left around the base of the outer case. The inner case is surmounted by a conical-shaped cover which is connected by rods slipping in rings, so that when, in sweeping the chimney, the cover is raised by the sweep's brush, it falls back into its place when the brush is withdrawn.

16,213, Window-sashes. W. Murray.

According to this invention, the sliding sashes balance one another, although weights, moving in a groove in the lower sash, are fitted for balancing the upper sash when required. The beading which keeps the sashes moving closely together is fixed with a spring, allowing the sashes to be easily removed when required. A part of one side of the frame is made to fold back upon hinges so that the sashes can be taken out. The window in that case slides into the recess, and is thus removed from the groove on the opposite side. If desired the sashes can then be attached to hinges and swing horizontally.

16,293, Securing and Ornamenting Parquetry. J. Ickringill.

This invention relates to certain improvements in parquetry flooring, especially with a view to obviate the defect of the tendency for one strip to rise above another, and to conceal the means used for securing the parquetry strips; and for ornament. The pattern is laid in a geometrical manner, and the edges of the strips are grooved for the reception of tongues. Or, countersunk holes are sunk in the ground work, which, after the screws are inserted to fasten the work more securely, are plugged tight with hard woods in patterns.

16,390, Wood-block Flooring. L. Oppenheimer.

By this invention holes are made in the blocks, and they are fastened by nails or screws to each other. The foundation is the same as is in general use.

366, Ventilating Rooms, &c. T. Sterné (Paris).

The claim in this invention describes the arrangement as "Means or apparatus for ventilating rooms or buildings by the combination of a fresh-air inlet apparatus composed of valves or flaps, which can only open inwards, with a foul or vitiated air discharge apparatus which can only open outwards, the inlet and discharge being identical with each other in construction, except that one is the reverse of the other."

11,109, Improved Chimney-top. J. H. Carrett.

According to this invention, a square earthenware pot having four openings is employed. Two of these are on one side, and two on the opposite side. Connected with the openings is an inclined plane or web running upwards, and also attached to each side. The top lip of each of these planes or webs projects beyond the centre of the pot, thus preventing a straight down-draught; for if the down-draught should miss the first plane and opening, it has still three others to pass; the four upward draughts are, however, sufficient to prevent this. The whole chimney-top is in one piece.

NEW APPLICATIONS FOR PATENTS.

Nov. 4.—15,028, J. Lander, Artificial Stone for Flooring, Decorating, &c.—15,065, F. Ransome, Manufacture of Cement.

Nov. 5.—15,071, J. Wright, Chimney-top and Ventilator.—15,088, R. Payne, Wind-proof Cowl.—15,096, S. and A. Fenn, Fireplaces of Kilns or

Ovens for Burning Bricks, &c.—15,114, G. Sonnenthal, Pile-drivers.

Nov. 7.—15,145, G. Denys, Unfastening the Doors of Theatres, &c.—15,159, J. Lee, Groove and Tongue Cutting Machine.

Nov. 8.—15,173, J. Bean and W. Gaines, Apparatus for Closing Doors and Preventing Slamming of same.—15,188, G. Wicks, Raising, Lowering, and Reversing Window-sashes. — 15,197, D. Allport, Lessening the Slamming of Doors, &c.—15,203, J. West, Water-waste Flushing Cisterns.—15,211, A. Boult, Wire-lathing.

Nov. 9.—15,266, J. Dunning and B. Priestley, Opening, Closing, or Adjusting Fanlights, Tipler Windows, Skylights, &c. — 15,306, J. Pauwels Water-meters.—15,327, M. Ende and A. Buchanan, Iron and Steel Flooring for Bridges.

Nov. 10. — 15,355, A. Patrick, Brick-making Machinery. — 15,356, A. Patrick, Brick-making Machines. — 15,372, J. Morris, Ventilator and Chimney-cowl. — 15,395, R. McGregor, Bricks, Blocks, Tiles, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

13,467, W. Smith, Manufacture of Cements.—13,508, W. Ballantine and R. Blackie, Flushing Cisterns for Water-closets, &c.—13,384, R. and W. Hocking, Water-closets, &c.—16,896, J. Fagan, Flushing Cisterns, &c.—13,240, W. Scott, Heating and Ventilating.—13,258, W. Dutton, Revolving Door-posts for Public Buildings.—13,528, J. Thrush, Traps for Drains, Sewers, &c.—13,713, M. Morgan and J. White, Raising and Lowering Window-sashes, Skylights, &c.—14,113, E. Tarver, Construction of Theatres.—14,167, J. Greenslade, Window-Frames and Sashes.—14,229, H. Lake, Wood-paving.—14,393 and 14,394, G. Snelus and others, Manufacture of Cements.—14,456, G. Maltster, Ventilators.—14,630, W. Shine, Ladders.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

176, T. Wilson and H. Johnson, Ventilating Apartments.—302, J. Garvie, jun., Pile-driving Apparatus.—743, E. Dive, Ventilating Apparatus. 6,307, E. Zahn, Water-trap.—9,888, J. Savage, Safety Bolt for Windows, Doors, and Casements.—10,968, P. Alrig, Portable Cranes.—12,473, A. Harrison, Wood-block Flooring.—12,768, W. Lake, Sash Lock and Fastener.—17,130, A. Mack, Artificial Boards, Slabs, Mouldings, &c.—437, J. Thompson, Ventilators and Chimney-cowls.—10,636, T. Baker, Draught Regulators for the Fronts of Fireplaces.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

NOVEMBER 3.

By GLASIER & SONS.
(At Brighton.)

Steyning, near—New Horton Farm, 135a. 0r. 25p., freehold	£7,800

NOVEMBER 7.

By G. A. WILKINSON.

Whitecross-street—1 to 6, Cherry Tree-court, freehold	1,550
Regent-street—37 and 39, Maddox-street, and 1, Mill-street, freehold	8,000
35, Maddox-street, freehold	4,080

NOVEMBER 8.

By FURBER, PRICE, & FURBER.

Hackney—94, 96, and 98, Well-street, and 1 to 7 odd, Balcorn-street, freehold	2,530
Addiscombe—13, Alexandra-road, freehold	425

By ROGERS, CHAPMAN, & THOMAS.

Hammersmith—25 and 27, York-road, 70 years, ground-rent 6*l.* 6s.	400
Notting Hill—94, Princes-road, 71 years, ground-rent 7*l.* 5s.	355
Clarendon-road, a plot of land, 50 years, no ground-rent	115
1, Railway Mews, 76 years, no ground-rent	305
83, Cornwall-road, 77 years, ground-rent 10*l.*	1,295
41, Archer-street, 56 years, ground-rent 7*l.* 7s.	700
Shepherd's Bush-road—Ground-rent of 100*l.*, reversion in 88 years	2,450
West Ham, Stephenson-street—Ground-rent of 15*l.*, reversion in 77 years	305

By A. RICHARDS.

Green-lanes—An enclosure of freehold land, 14a. 1r. 33p.	2,000
Edmonton—Three freehold enclosures of land, 27a. 3r. 34p.	5,425
Windmill-road—The Huxley Flour Mills, freehold	500
Firs-lane — Freehold cottages and land, 5a. 1r. 31p.	750

NOVEMBER 10.

By J. JACOBS & SONS.

Paddington—16 and 17, Market-street, 34 years, ground-rent 8*l.*	305

By COLEMAN & Co.

Clapton—80, Blurton-road, 94 years, ground-rent 6*l.* 6s.	300

By E. STIMSON.

Camberwell—1 to 11 odd, Sultan-street, 78 years, ground-rent 27*l.*	450
Peckham—233 to 239 odd, St. George's-road, freehold	1,100
Lambeth—26, 27, and 28, Wood-street, 22 years, ground-rent 18*l.*	600
Clapham—29, Sandmore-road, 94 years, ground-rent 7*l.* 10s.	300
57, Solon-road, 92 years, ground-rent 6*l.* 17s. 6d.	320

By F. J. BISLEY.

Bermondsey—1 and 3, Reverdy-road, 59 years, ground-rent 9*l.*	£755
112 and 114, Lucey-road, 57 years, ground-rent 8*l.*	530

By REYNOLDS & EASON.

Kilburn—14, Victoria-villas, 78 years, ground-rent 10*l.*	360
Dalston—56 and 58, Marlborough-road, 58 years, ground-rent 7*l.*	505

By C. C. & T. MOORE.

St. George's-in-the-East—10, Umberston-street, freehold	215
Rotherhithe—43 and 45, Clarence-street; 6 and 7, Dodd's-place; 2 and 4, Forsyth-street; and a plot of land, freehold	775
Tottenham—8 and 9, Tavistock-villas, freehold	500

By FULLER & FULLER.

St. Luke's—126 and 127, Upper Whitecross-street, freehold	3,000
42 to 45, Banner-street, freehold	1,100
Bethnal Green—62, 64, and 66, Sale-street, 9 years, ground-rent 7*l.*	470

NOVEMBER 11.

By BAKER & SONS.

Finchley-road—An enclosure of freehold land, 5a. 2r. 3p.	1,500
Harlesden—4 and 5, Fortune Gate-terrace, freehold	3,260
Slinfold, Sussex—Four enclosures of land, 15a. 0r. 15p., freehold	500

By GREEN & SON.

Upper Norwood, Mowbray-road—Two houses, 86 years, ground-rent 5*l.*	1,100
Islington—137, 155, and 161, Caledonian-road, 53 years, ground-rent 75*l.*	1,790
171 and 181, Caledonian-road, 53 years, ground-rent 50*l.*	1,270
155 and 169, Copenhagen-street, 53 years, ground-rent 46*l.* 10s.	460
179, 181, and 183, Copenhagen-street, 53 years, ground-rent 58*l.* 10s.	1,050
Improved ground-rent of 66*l.*, term 53 years; and the reversion to 64*l.* a year, life aged 73 years, term 53 years	1,400

By W. W. JENKINSON.

Camden Town, Rochester-square—Ground-rent of 25*l.*, term 58 years	540
Camden Town, Wilmot-place — Ground-rent of 17*l.* 10s., term 56 years	370
Brixton—52, Barrington-road, 35 years, ground-rent 8*l.* 2s.	320
54, Barrington-road, 35 years, ground-rent 7*l.* 10s.	280

MEETINGS.

MONDAY, NOVEMBER 21.

Royal Institute of British Architects.—Mr. W. Brindley, F.R.M.S., on "Building and Decorative Stones of Egypt." 8 p.m

TUESDAY, NOVEMBER 22.

Institution of Civil Engineers.—Further discussion on Sir F. A. Abel's paper on "Accidents in Mines." 8 p.m.

WEDNESDAY, NOVEMBER 23.

Society of Arts.—Professor Silvanus P. Thompson on "The Mercurial Air-Pump." 8 p.m.

THURSDAY, NOVEMBER 24.

Society of Telegraph-Engineers and Electricians.—(1) Dr. J. A. Fleming, M.A., and Mr. C. H. Gimingham on "Some Instruments for the Measurement of Electromotive Force and Electrical Power." (2) Professor W. E. Ayrton, F.R.S., and Mr. J. Perry, F.R.S., on "Portable Voltmeters for Measuring Alternating Potential Differences." 8 p.m.

FRIDAY, NOVEMBER 25.

Glasgow Architectural Association. — Mr. J. J. Burnet, F.S.A., on "The Architect's Assistant."

Miscellanea.

New Baths at Hyde.—The Mayor of Hyde, Mr. J. Cheetham, recently laid the foundation-stone of some new baths, the cost of which will be 4,300*l.* The building is situated in Union-street, and is set back 16 ft. from the street. Leading from the two main entrances are a set of slipper baths, 7 ft. by 7 ft., fitted with porcelain. There is also a plunge-bath, with a water area of 75 ft. by 25 ft., the ground area being 89 ft. by 40 ft., and this is supplemented by thirty-eight dressing-boxes, two shower and foot baths, and other conveniences. The room will be spanned by a light iron roof, the underside of the spars being boarded. The light is obtained from a ridge skylight running the full length of the building, and raised above the roof, with Louvre ventilators. The water will be 6 ft. deep at one end, and 3 ft. 6 in. at the other, and the sides and bottom will be lined with white enamelled bricks. The walls will be faced to a height of 5 ft. with brown salt-glazed bricks, and above this with grey bricks. The women's plunge-bath will be carried out in the same manner, the size of the water area being 33 ft. by 17 ft., and the ground area 42 ft. 6 in. by 25 ft. 6 in. At the back of the large plunge-bath will be the laundry, and raised above it about 6 ft., the space below being used as the boiler-house. The laundry will be fitted with machinery, by Messrs. Bradford & Co., of Salford, who have also undertaken the engineers' work. Mr. S. Warburton, of Miles Platting, is carrying out the contract for the boilers. The architect is Mr. J. W. Beaumont, of Manchester, the clerk of works being Mr. Hill.

Roman Discoveries in Trieste.—Recently some interesting archæological discoveries have been made in Trieste. During the pulling down and excavating of certain parts of the old city, in order to provide more light and space, a number of Roman graves and sarcophagi have been encountered, and some days ago the workmen engaged in some canal work at Barcola, in that city, came upon the remains of a Roman building, the mosaic floors of which were in excellent state of preservation. By continued excavations, three of these floors were laid bare. They consist of the usual tesseræ, having a border of black or white marble. In a fourth room, not yet completely excavated, the mosaic reveals the feature of a dolphin. It is believed that the remains are those of the villa of a Roman patrician. An aqueduct has also been discovered, leading from a neighbouring hill to the villa, the calcined clay pipes of which are almost uninjured. The excavations, which are expected to bring further interesting archæological discoveries to light, are conducted by Prof. Puschi for the Archæological Museum at Trieste.

Stone Bridges v. Iron Bridges.—According to the *Railroad Gazette*, the Pennsylvania Railroad Company is gradually replacing the existing iron bridges of short span on its lines by bridges of quarry-stone or brickwork. The experience has been that the iron bridges were not only a constant source of anxiety, but constituted a continual drain upon the income of the Company. It was necessary to inspect them regularly and carefully, and to repair or strengthen and in some cases even renew them. The fact, too, that the weights to be carried by railway bridges are steadily increasing, and that it is impossible to foresee what those weights may be, say in five or ten years' time, has also been taken into consideration in resolving upon the change. It is likewise urged in favour of masonry bridges that, although their first cost may be greater than that of iron bridges, they involve little expense afterwards for inspection and maintenance; that they sustain heavy weights much more efficiently, and are less liable to injury or destruction by accident than lattice bridges of iron or wood.

Metropolitan Building Act, 1885: District Surveyors' Fees.—A question of some interest to builders and others was decided at the Woolwich Police-court, on the 2nd inst., when Mr. Davis, builder, of New Eltham, was summoned by the District Surveyor, for payment of 3*l.* 2s. 6d., the fee due upon the erection of a house at Southwood-road, Eltham. The defendant disputed the amount charged, upon the ground that the cellar should not be regarded as a story in calculating the fee. Mr. Marsham decided that the cellar constituted a story, and made an order for payment of the fee claimed, together with costs.

Dolfor.—Two two-light stained-glass windows have recently been erected in Dolfor Church, Newtown, Montgomeryshire. One is in commemoration of her Majesty's jubilee, and illustrates the figures of King David and Esther, a medallion of Queen Victoria appearing in the top part of the tracery; the other represents the figures of SS. John and Paul. The execution of the work was entrusted to Messrs. Jones & Willis, of Birmingham.

British School at Athens.—Mr. Penrose has now retired from the post of Director of this Institution, which he accepted temporarily when it was started under the auspices of the Hellenic Society, and has been succeeded by Mr. Ernest Gardner.

Rushton.—A three-light painted window has just been fixed at Rushton parish church, to the memory of Mrs. Fanny Isabella Wilson, daughter of the late Rev. Francis Smith. The window is from the studio of Messrs. Charles Evans & Co., and is the gift of Mr. Edmund Smith.

PRICES CURRENT OF MATERIALS.

TIMBER.		£. s. d.	£. s. d.
Greenheart, B.G.	ton	6 5 0	7 10 0
Teak, E.I.	load	8 0 0	12 10 0
Sequoia, U.S.	foot cube	0 2 3	0 3 0
Ash, Canada	load	3 0 0	4 10 0
Birch ,,		2 0 0	3 10 0
Elm ,,		3 10 0	4 10 0
Fir, Dantsic, &c.		1 10 0	4 0 0
Oak ,,		2 10 0	4 10 0
Canada		3 0 0	6 0 0
Pine, Canada red		2 0 0	3 10 0
,, yellow		2 0 0	4 0 0
Lath, Dantsic	fathom	3 0 0	5 0 0
St. Petersburg		4 0 0	5 10 0

TIMBER (*continued*).	£. s. d.	£. s. d.
Wainscot, Riga .....log	0 0 0	0 0 0
Odessa, crown.....	2 10 0	3 0 0
Deals, Finland, 2nd and 1st...std.100	7 0 0	8 0 0
,, 4th and 3rd.....	5 10 0	6 10 0
Riga ..... ,,	5 10 0	7 0 0
St. Petersburg, 1st yellow	8 10 0	13 0 0
2nd ,, ...	7 0 0	8 0 0
,, white	6 10 0	8 10 0
Swedish ..... ,,	6 0 0	14 0 0
White Sea	0 0 0	0 0 0
Canada, Pine, 1st	16 0 0	24 0 0
,, ,, 2nd.....	10 0 0	15 0 0
,, ,, 3rd, &c.....	6 0 0	9 0 0
,, Spruce, 1st	8 0 0	9 0 0
,, 3rd and 2nd	5 0 0	7 0 0
,, ,, New Brunswick, &c.....	5 0 0	6 10 0
Battens, all kinds	4 0 0	10 10 0
Flooring Boards, sq., 1 in., prepared, First.....	0 8 0	0 11 0
Second	0 6 6	0 7 6
Other qualities	0 4 0	0 6 0
Cedar, Cuba .....foot	0 0 3	0 0 3½
Honduras, &c.	0 0 2½	0 0 3½
Australian	0 0 2	0 0 3
Mahogany, Cuba	0 0 4½	0 0 7
St. Domingo, cargo average	0 0 4½	0 0 6
Mexican ,, ...	0 0 3	0 0 3¾
Tobasco ,, ...	0 0 3¾	0 0 5
Honduras ,, ...	0 0 3½	0 0 5
Maple, Bird's-eye .....ton	0 0 5	0 0 7
Rose, Rio .....ton	8 0 0	11 0 0
Bahia.....	7 0 0	9 0 0
Box, Turkey .....ton	5 0 0	12 0 0
Satin, St. Domingo .....foot	0 0 5	0 0 9
Porto Rico	0 0 6	0 0 10
Walnut, Italian	0 0 3½	0 0 5

METALS.	£. s. d.	£. s. d.
IRON—Bar, Welsh, in London...ton	4 15 0	5 0 0
,, ,, in Wales	4 5 0	4 10 0
,, Staffordshire, London	5 10 0	6 0 0
COPPER—		
British, cake and ingot .....ton	49 0 0	49 10 0
Best selected	50 10 0	51 10 0
Sheets, strong.....	54 10 0	55 0 0
Chili, bars	43 5 0	45 0 0
YELLOW METAL.....lb.	0 0 4⅞	0 0 5¼
LEAD—		
Pig, Spanish .....ton	12 17 6	0 0 0
English, common brands.....	13 5 0	0 0 0
Sheet, English	14 2 6	0 0 0
SPELTER—		
Silesian, special .....ton	17 0 0	17 5 0
Ordinary brands.....	16 15 0	16 17 6
TIN—		
Straits.....ton	133 10 0	0 0 0
Australian	133 10 0	0 0 0
English ingots	134 0 0	0 0 0
OILS.		
Linseed .....ton	19 2 6	19 7 6
Cocoanut, Cochin	30 0 0	32 0 0
Ceylon	24 0 0	0 0 0
Palm, Lagos	22 0 0	0 0 0
Rapeseed, English pale	25 15 0	26 0 0
,, brown	24 5 0	24 10 0
Cottonseed, refined	19 15 0	0 0 0
Tallow and Oleine.....	25 0 0	45 0 0
Lubricating, U.S.....	5 0 0	6 0 0
,, refined.....	5 0 0	12 0 0
TURPENTINE—		
American, in casks .....cwt.	1 4 9	0 0 0
TAR—		
Stockholm .....barrel	0 15 0	0 0 0
Archangel	0 10 6	0 0 0

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Enlargement of Local Board Offices	Horsham Local Board	20*l.* and 10*l.*	Dec. 29th	ii.
Linoleum and Floor-Cloth Designs	Mitcham Linoleum Co....	200*l.*	Not stated...	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Making-up and Paving Roads	Wandsworth Bd. of Wks	*Official*	Nov. 22nd	ii.
Removal of Snow, Ice, and Snow Sludge.....	St. Martin-in-the-Fields' Vestry	do.	Nov. 24th	x.
Yard Paving, Casual Wards	Wndswrth & Claphm Un	T. W. Aldwinckle	do.	x.
Road-making and Paving Works	Walthamstow Local Bd.	H. S. Ridings	Nov. 25th	ii.
Broken Granite, Siftings, and Flints	Dover Town Council ...	*Official*	Nov. 28th	x.
Re-Erecting Bridge	Oxford Local Board ...	W. H. White.....	Nov. 29th	ii.
Kerbing	Enfield Local Board.....	W. Kitteringham.....	Dec. 7th	ii.
Works and General Repairs (three years) ...	Great Eastern Ry. Co.	J. Wilson	Dec. 14th	x.
Enlargement of Schools	Schl. Board for London	*Official*.....	Not stated...	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Draughtsman and Assistant	Gold Coast Government	300*l.*, &c.....	Nov. 24th	xiv.

TENDERS.

BRISTOL.—For erecting a pair of cottages at Clyde-terrace, Bedminster, for Mr. J. B. Hasell. Mr. Herbert J. Jones, architect :—

Cowlin & Son	£617 0 0
Bale & Westlake.....	612 0 0
G. Humphreys.....	590 7 6
W. Church.....	584 0 0
H. Johnson	547 16 0
Eastabrook & Sons	497 0 0
W. Veals	466 0 0
T. R. Lewis	435 0 0
J. Perrott	428 10 0
T. W. Aspinall	404 18 0
W. P. Jones (accepted).....	390 0 0

BRISTOL.—For rebuilding portions of the Redcross-street Tannery, Bristol, for Mr. Hy. Densham. Mr. Herbert J. Jones, architect :—

R. Wilkins & Sons	£1,875 0 0
Stephens & Bastow	1,849 0 0
G. Humphreys	1,737 3 6
Wm. Church	1,736 0 0
H. B. Milsom	1,720 10 0
Cowlin & Son.....	1,693 0 0
Jno. Perrott	1,690 0 0
J. E. Davis	1,660 0 0
Eastabrook & Sons	1,644 0 0
T. R. Lewis (accepted)	1,552 0 0

BROMLEY (Kent).—For wrought-iron fencing in the Queen's Mead, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor :—

Creggon & Co.	£394 8 3
Perkins & Bellamy	349 13 0
M. Lloyd	340 0 0
S. C. Grainger	330 15 0
Hill & Smith.....	323 14 6
Bayliss, Jones, & Bayliss	319 12 6
H. E. Mitchell & Co. (accepted).....	312 11 0

EALING.—For alterations and repairs to Knoyle House, Castlebar-road, Ealing. Mr. H. McLachlan, A.R.I.B.A., architect, 17, Farringdon-street, London. No quantities :—

W. T. Johnson.....	£1,350 0 0
Penny & Co., Ealing	992 0 0
T. Nye, Ealing	960 0 0
A. & E. Braid, Chelsea (accepted)...	840 0 0
S. Morby, City (withdrawn)	650 0 0

EPSOM.—For erecting cottage hospital in commemoration of her Majesty's Jubilee, for Epsom, Ewell, and neighbourhood. Mr. J. R. Harding, architect, Epsom :—

Original Plan and Specification.

Hughes, Ashtead	£2,800 0 0
Jeal, Epsom	2,500 0 0
G. Hards, Ewell	2,430 0 0
Batchelor, Leatherhead.....	2,399 0 0
S. Hards, Ewell	2,398 0 0
Skelton, Leatherhead.....	2,379 0 0
Nye, Epsom	2,364 10 7
Howe & White, Carshalton	2,350 0 0
Chivington, Epsom	2,325 0 0
Taylor, Banstead.....	2,316 0 0

Amended Plan and Specification.

		A*.
Nye	£1,994 0	£1,994 0
G. Hards	1,937 0	1,854 0
Howe & White.....	1,850 0	1,850 0
Hughes	1,790 0	1,806 0
Jeal.....	1,788 10	1,788 10
Batchelor	1,667 0	1,745 0
Skelton	1,700 0	1,730 0
Taylor.....	1,595 0	1,621 0
Chivington.....	1,569 0	1,589 0
S. Hards	1,498 0	1,492 0†

* If Broseley tiles in lieu of Broomhall tiles on roof.
† Accepted.

FULHAM.—For the erection of three sets of fire-escape bridges and sun-rooms at the St. Gerrge's Union Infirmary, Fulham-road, S.W., for the Guardians of the Poor of St. George's Union. Messrs. H. Saxon Snell & Son, architects, London :—

M. T. Shaw & Co.	£3,850 0 0
R. W. Wilkinson & Co.....	3,756 0 0
Robt. Crane	3,650 0 0
J. G. Jones & Co.....	3,604 0 0
J. J. Robson	3,392 0 0
Gardner, Anderson, & Clarke	3,200 0 0
St. Pancras Iron Works.....	2,954 0 0
Bartle & Co.	2,764 0 0
Potter & Sons (accepted)	2,474 0 0

HALSTEAD (Kent).—For rebuilding farm buildings, &c., after fire, at Broke Farm, Halstead, Kent. Messrs. Daniel Smith, Son, & Oakley, architects, 10, Waterloo-place :—

Taylor & Son, Bromley (accepted)...	£1,050 0 0

[No competition.]

HINCKLEY.—For erection of factory, cotton shed, and engine and boiler house, for Messrs. Orrill, Jackson, & Co. Mr. J. Wells, architect :—

T. & G. Harrold	£1,109 0 0
J. & W. Harrold	1,036 10 0
Groves & Rowley.....	966 0 0
Littler	875 14 0
Farmer & Greaves	889 15 0
Goodman.....	845 5 0
Jones	842 19 0
Foxon	841 5 0
Shilton, Stoke Golding,* (accepted)	810 0 0

* The rest of Hinckley.

HULL.—For the erection and completion of proposed Salvation Army Barracks buildings in Madely-street, Hessle-road, Hull, for General Booth. Mr. E. J. Sherwood, architect, 101, Queen Victoria-street, E.C. Quantities by the architect :—

F. J. Coxhead, Leytonstone*	£896 0 0
F. Southern	857 2 8
J. F. Freeman	855 0 0
J. Dawes	840 14 0
E. Good	840 0 0
W. Lison	804 0 0
F. Beelby	800 0 0
J. Garbutt	800 0 0
S. Adkinson	795 0 0
M. Harper.....	787 5 0
F. Blackburn	782 19 2
F. Hall	781 13 1½
J. Drury.....	775 0 0

* The rest of Hull.

LONDON.—For rebuilding Nos. 43 and 44, Chalton-street, Euston-road, for Mr. H. Duligall. Mr. Edwin J. Sadgrove, architect, 30, Fleming-road, S.E. :—

Jones	£1,506 0 0
Langham.....	1,395 0 0
Phillips	1,167 0 0
Boyden (accepted)	1,100 0 0

LONDON.—For erecting new tripe house and shop, &c., and in generally repairing and painting the whole of the premises, No. 329, Walworth-road, Walworth, S.E., for Mr. J. W. Martell. Mr. James F. Wesley, architect, Forest-gate, E. Quantities supplied by the architect :—

H. Bodien.....	£1,314 0 0
W. Downs.....	1,086 0 0
J. Walker	1,076 0 0
G. E. Baney	1,046 0 0
G. Limn	1,020 0 0
J. A. Taylor	1,019 0 0

LONDON.—For erecting dwelling-houses in Little Sutton-street. Mr. R. W. Hobden, architect :—

Little	£769 0 0
Cook & Co.....	760 0 0
Lyford.....	720 0 0
Jackson & Todd	639 0 0
Exton & Burton	637 0 0
W. G. Allard	585 0 0
Lusk	570 0 0

PAIGNTON (Devon).—For the erection of two new business premises, Nos. 8 and 9, Palace-avenue, for Mr. J. M. Kingwill. Mr. G. Soudon Bridgman, architect, Paignton :—

H. P. Rabbick	£1,680 0 0
Henry Webber	1,434 0 0
Marcus Bridgman (accepted)	1,394 17 6

[All of Paignton.]

PAIGNTON.—For the erection of business premises at No. 7, Palace-avenue, for Mr. W. Lambshead. Mr. G. Soudon Bridgman, architect, Paignton :—

Marcus Bridgman (accepted)	£916 10 0

PAIGNTON.—For alterations and additions to No. 14, Adelphi-terrace, Paignton, for Mr. J. B. Macaulay. Mr. G. Soudon Bridgman, architect, Paignton :—

Robert Evans	£568 0 0
Henry Webber (accepted)	558 10 0

For Boundary-walls to Grounds.

Henry Webber.....	89 5 0

[All of Paignton.]

PLAISTOW.—For finishing five houses at Plaistow, under the superintendence of Mr. Bagge, Aldersgate Chambers :—

Henley.....	£1,480 0 0
Pearce	994 5 0
Whicher	918 0 0
Williams & Reeves	798 10 0
Timson	745 0 0
G. Barker, Whitechapel	720 0 0
Rowley	689 5 0
Sunley (withdrawn)	448 0 0

PUTNEY.—For alterations to the Prince of Wales Farm Dairy, Putney, for Mr. Wm. James. Mr. Edwin J. Sadgrove, architect, 30, Fleming-road, S.E. :—

Longland	£1,254 0 0
Phillips	960 0 0
Harling	805 0 0
Boyden	798 0 0
Williams (accepted)	789 0 0
Channon (withdrawn).....	543 0 0

STRATFORD.—For pile driving, and repairs to wharf, for Messrs. Ashton & Green, Stratford, E. :—

Gibbs	£370 0 0
Carter	330 6 0
Reed	247 0 0
Potter.....	189 10 0
J. J. Robson, Snaresbrook (accepted)	184 13 0

BROMLEY (Kent).—For sewering, levelling, kerbing, &c., the following private streets, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor:—

——	Addison Road.	Blomfield Road.	Cowper Road.	Chatterton Road, A to B.	Chatterton Road, B to C.	Walpole Road.	Pope Road.	Johnson Road.	Havelock Road.	Great Elms Road.	Marlboro Road.	Welling-ton Road.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Wm. Gibson	946 7 10	836 16 0	659 18 11	443 19 5	712 2 6	1144 5 4	1048 5 4	607 18 3	735 7 3	539 19 3	496 4 3	527 10 6
Wm. Harris	760 19 3	670 7 1	529 8 1	360 19 0	576 11 4	936 18 10	867 5 11	502 6 6	601 13 6	443 5 7	398 18 11	422 16 9
Abram Kellet	697 5 5	618 17 8	488 16 6	328 1 2	526 0 3	853 1 11	780 6 5	449 19 8	566 18 6	400 10 5	373 15 4	395 9 7
Hindle & Morrish (Limited)	668 2 7	603 1 4	480 8 6	318 17 4	536 17 7	887 4 0	814 4 4	468 15 6	545 5 2	411 15 5	360 6 7	382 11 10
J. L. Cattell	665 2 8	579 15 8	464 2 11	308 11 9	498 11 6	821 8 8	753 15 5	428 11 10	526 17 4	399 10 4	344 16 5	368 5 6
J. Mowlem & Co.	649 11 3	572 9 1	451 13 10	302 12 1	496 13 4	815 2 10	760 19 8	433 16 7	542 16 11	389 15 3	357 12 5	379 15 5
E. & W. Iles	632 8 0	551 15 8	441 6 5	297 8 4	471 11 3	772 18 9	713 1 8	408 14 0	503 5 2	356 18 0	331 16 10	352 14 1
Woodham & Fry	630 13 8	552 9 6	433 12 9	294 12 7	478 18 7	779 12 10	725 9 10	417 19 11	524 6 6	363 4 10	321 5 6	352 0 6
T. Hall	603 13 6	533 14 2	423 5 1	287 0 9	481 10 10	774 17 8	709 6 8	409 3 0	497 9 0	360 8 8	330 0 10	350 2 3
T. Adams	595 16 0	530 19 3	419 14 10	280 1 7	485 2 7	794 8 6	740 19 6	427 5 3	517 11 4	390 7 6	341 14 7	380 11 8
J. G. B. Marshall	589 2 5	519 2 1	410 19 0	277 14 1	479 17 4	747 14 8	693 13 5	398 1 7	484 19 6	343 12 5	320 8 1	343 0 10
Ely Perkins	557 19 3	489 2 5	385 11 5	259 9 3	503 9 11	826 16 7	770 6 6	441 5 10	542 19 1	359 10 2	357 13 4	380 3 2
Wm. Porter	563 19 0	502 5 9	398 11 6	266 14 5	445 10 6	739 2 3	677 16 0	389 9 5	475 4 4	343 10 2	311 19 11	334 2 6
T. Lansbury	527 7 1	464 0 1	366 7 3	246 2 1	412 11 4	677 8 7	628 19 7	357 6 0	*431 9 4	*304 16 3	*287 5 5	*307 5 9
E. Peill & Sons	*498 3 3	*438 5 7	*344 11 0	*230 9 9	*393 15 8	*646 4 4	*600 11 5	*341 12 9	443 0 11	317 13 6	292 8 3	311 18 1
A. Palmer	499 11 3	438 14 6	345 15 3	234 11 0	383 19 8	643 18 3	564 2 1	333 2 1	420 15 0	295 4 7	274 14 4	291 14 5

* Accepted.

——	Newbury Road.	Aylesbury Road.	Westmoreland Road.	Ravensbourne Road.	Ringers Road.	Ethelbert Road.	Recreation Road	Martin's Road.	Newman Road.	Walter's Yard.	Park End.	Park Grove.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Wm. Gibson	821 1 8	1111 19 10	358 8 2	930 18 2	494 18 9	539 18 3	596 19 0	812 14 10	169 8 4	230 0 10	1470 11 0	231 5 7
Wm. Harris	657 18 2	888 14 8	296 7 10	812 14 1	441 4 8	466 4 10	497 5 1	651 18 7	126 17 8	200 10 6	1222 9 9	186 3 0
Abram Kellet	604 15 1	813 19 6	260 2 8	686 0 3	365 15 9	398 3 10	450 19 4	594 15 2	112 18 0	*151 15 6	1151 9 4	165 1 5
Hindle & Morrish (Limited)	591 10 10	799 19 1	247 15 3	734 9 6	379 19 5	406 10 6	463 16 11	562 2 0	105 3 4	183 19 3	1186 0 5	153 10 7
J. L. Cattell	564 2 1	764 19 2	233 12 0	659 14 0	360 14 10	390 3 5	440 3 8	543 13 10	103 1 8	227 4 3	1090 11 0	152 9 2
J. Mowlem & Co.	587 19 6	788 13 1	245 9 1	694 11 9	365 6 2	399 5 10	449 5 6	576 9 2	105 1 7	156 4 0	1108 0 9	154 16 9
E. & W. Iles	551 13 10	740 4 5	245 2 6	669 0 ?	359 1 1	387 13 3	415 17 6	542 10 11	102 8 9	180 10 10	1018 11 4	160 0 4
Woodham & Fry	538 1 4	744 14 11	243 7 11	648 6 2	349 5 1	385 3 6	417 7 10	541 12 10	106 10 4	159 16 6	980 10 5	146 17 10
T. Hall	540 12 3	719 3 6	229 5 0	663 12 11	352 18 8	380 4 10	406 1 1	526 4 3	97 14 4	225 13 3	995 15 0	142 6 5
T. Adams	560 10 11	744 18 8	246 4 10	671 14 4	355 14 2	380 18 4	415 12 0	550 6 5	102 15 10	154 16 2	1070 11 3	156 4 4
J. G. B. Marshall	533 4 4	709 14 0	232 13 4	633 3 10	343 0 8	371 7 7	400 13 2	519 6 8	98 18 11	166 17 7	1004 14 8	143 15 10
Ely Perkins	595 12 6	797 7 10	257 19 7	702 16 3	375 19 8	407 4 4	440 12 3	600 15 0	120 12 4	170 9 10	1102 8 4	167 4 0
Wm. Porter	510 5 8	682 6 7	223 8 7	623 15 8	331 19 4	361 5 1	390 7 0	501 5 0	95 13 9	—	957 15 1	136 13 10
T. Lansbury	*469 16 6	*634 3 9	*204 17 0	596 9 1	317 10 3	348 11 3	*350 10 0	*462 11 9	92 13 2	170 1 0	*9 2 11 1	131 18 1
E. Peill & Sons	484 7 9	650 2 2	209 17 0	*564 19 6	*302 7 11	*332 17 3	363 5 7	479 16 0	*91 12 0	180 12 8	926 18 5	*131 7 11
A. Palmer	455 2 5	605 16 8	195 3 9	506 11 8	270 8 5	298 8 7	336 5 3	447 18 8	85 18 8	130 4 2	813 0 0	121 19 9

* Accepted.

WEST HADDON.—For the first section of the restoration of All Saints' Church, West Haddon, Northamptonshire. Mr. W. Millican, architect, Leicester:—

	A*
C. Claridge, Banbury, Oxon	£544 0 0
Law & King, Lutterworth	525 0 0
E. Jarvis, Banbury	508 0 0
Jno. Gee, Daventry	440 0 0
W. & J. H. Martin, Market Harborough	389 0 0
Roberts & Son, Weedon (accepted)	379 0 0
G. W. Mitchell, Northampton	310 0 0

* Net amount of tender, after deducting allowance for old materials.

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